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ABSTRACT

Financial management in higher education is discussed in six articles, with attention to problems and creative solutions. The problem of capital depletion of facilities, research laboratories, instrumentation, and instructional equipment may be approached by creative partnerships between the state, institutions, and private capital sources. Old solutions, whether "pay-as-you-go" or long-term bonding, may be no longer feasible or applicable to current problems. Article titles and authors are: "Historical Perspective on University Debt Financing" (Patricia A. Libby); "New Investment Strategies for College and Universities" (Edward Q. Moulton); "Taking Advantage of State and Federal Tax Laws" (Michael B. Goldstein); "Financing Equipment and Facilities: Educating the Alternatives" (Raymond Smoot, Jr.); and "Creating a State Equipment Fund" (Gordon K. Davies). An appendix, "Exemplary Structure of a University Research and Development Enterprise," is a contribution of the Dow, Lahnes & Albertson firm. Charts and flow charts, as well as narrative sections, cover ownership and control of the foundation, rights to intellectual property, flow of venture capital, flow of investment income (working capital), and flow of project-derived income (profit). (SW)

Creative Financing For Higher Education Facilities And Equipment

STATE HIGHER EDUCATION EXECUTIVE OFFICERS
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FOREWORD

Financial management in higher education is a continually changing and ever-more sophisticated art, which must be adaptable to new economic conditions and new problems. This booklet addresses the problem of capital depletion of the facilities, research laboratories, instrumentation and instructional equipment of our colleges and universities. While the solutions vary, all call for new and creative partnershis between the state, the institutions, and private capital sources. The message is that old solutions—whether "pay-as-you-go" or long-term bonding may be no longer feasible or applicable to today's problems.

Alternative financing and more sophisticated cash management encompass sometimes confusing but exciting opportunities. Our authors, who walk you through a lexicon of new language, provide a thorough briefing on the implications of current federal tax structures for college and university financing, and describe the opportunities for partnerships with the private sector.

At the same time, the authors highlight the importance of close collaboration between state entities and institutions. New financial instruments and collaborative arrangements provide great opportunities to improve the quality of higher education; but imprudent decisions could also do great harm to the credibility of the enterprise. The involvement of the state—through statewide coordinating and governing boards—is essential to gain state support for these initiatives and to maintain public confidence.

Creative Financing grew out of concerns of a group of state higher education executive officers who brought the issue before SHEEO at its 1984 annual meeting in St. Paul, Minnesota. Special thanks go to Gordon Davies, Director of the State Council of Higher Education in Virginia and 1983-84 president of SHEEO, for his genesis of this booklet.

With these concerns in mind, we are pleased to offer this discussion of alternative funding strategies for capital renewal. We welcome your comments and will do our best to update you on developments in other states as we learn of them.

James R. Mingle
Executive Secretary
State Higher Education Executive Officers

Historical Perspective on University Debt Financing

1

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Changes in financing practices have matched the dramatic changes that have taken place in the role and scope of higher education. This chapter focuses on the historical development of the use of debt financing in colleges and universities and discusses specifically the various dimensions of debt financing and the manner in which they have been affected by relevant historical events. The dimensions of university debt financing, which provide the framework for this discussion, are listed in Table 1 (from Libby, 1984).

In the first section, changes in institution-related dimensions including the amount and use of proceeds and timing and legal constraints are examined against the background of corresponding changes in debt-market conditions. In most cases, university debt obligations are issued in the tax-exempt debt market, which is dominated by municipal issuances. Thus, many of the relevant market conditions discussed, including interest rates and standard practices and regulations, relate to this larger market. The second section addresses evolutionary patterns in the form of debt issues. These variables include the type of instrument and legal collateral, method of placement, types of independent assurances provided, and the actors involved in the process. Finally, changes in important indenture provisions including term to maturity, call provisions, and financial and operating restrictions are discussed.

● Institution-Determined Variables and Debt Market Conditions

● Municipal Debt

The early 1800s marked the real beginning of municipal bond indebtedness in the United States (Moak, 1970).

Table 1. Dimensions of University Debt Financing

Dimensions	Descriptions
Institution-oriented	
Amount of debt issued	Varies due to financial needs of a project
Use of Proceeds	New capital building projects and replacement/ renovation projects (for educational, hospital, or other auxiliary enterprise facilities) Cash flow needs — Equipment purchase Student loan funds — Refinance existing-debt
Timing constraints	Immediate or flexible timeframe
Legal constraints	Varies by institution as imposed by state or federal governments or agencies
Debt Market Conditions	
Interest rates and expectations	Linked to prevailing rate for municipal debt and prime rate
Tax-exempt financing practices	Current practices and regulations used by lenders underwriters/investors including tax laws of IRS
Feasible Set of Arrangements	
Form	
Financial instruments	Bonds (general obligation, project revenue, limited or special obligation, advance refunding, refinancing) Notes (general obligation, project revenue, limited or special obligation, refinancing, bond anticipation) Leases
Method of placement	Negotiation/direct placement Competitive bidding/public sale State bonding authority or other nonprofit agency or foundation
Independent assurances	Financial audit — Default insurance Credit ratings
Actors	Bond counsel — Executive officers Rating agencies — Certified public accountants Insurance agencies — State debt authority Lenders/purchasers/investors

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Indenture provisions — Collateral (fullfaith and credit, tuition, rent, project revenues, user fees, new debt proceeds, letters of credit, mortgages, property rights)
Term to maturity — Call/prepayment features
Financial restrictions — Operating restrictions

The tax exemption on municipal issues was initiated in 1894, but received subsequent ratification by the Revenue Act of 1913 (the beginning of our federal income tax system). The Act excluded interest income on municipal issues from taxation so as not to impair the essential borrowing function of the municipalities and political subdivisions (themselves exempt from taxation under Section 501 of the Internal Revenue Code). There has been a persistent attempt ever since 1894 to eliminate the exemption for reasons of inequity and unconstitutionality. While many studies such as Mussa and Kormendi (1979) continue to debate the issue, no change in the status of the exemption appears on the horizon.

Conservative attitudes toward incurring debt prevailed until after World War II when there was a major reversal in views. By the late 1960s, an increasing amount of business transactions were through credit (the "fly now, pay later" approach). The end of the 1960s marked another change. Until then, the municipal marketplace had been relatively free of federal restrictions or extensive regulation by any federal agency, such as the Securities and Exchange Commission (SEC) which established regulation for other securities markets. In 1968, the Revenue and Expenditure Control Act limited the issuance of industrial development bonds (for the construction of buildings by municipalities for leasing to corporations). In 1969, Congress enacted the arbitrage bond statute (Internal Revenue Code, Section 103 (c)), limiting the investment of unused bond proceeds, as part of the Tax Reform Act. Since then, the Internal Revenue Service has promulgated detailed restrictions regarding issuance of these tax-exempt securities. By 1979, the federal regulations concerning arbitrage were finalized, although refinement of the rules continues.

The Municipal Securities Rulemaking Board was established in 1975 under the securities laws, also to regulate the activities of bond dealers, but did not extend its regulation to disclosure or accounting rules of bond issuers (although these are of continued interest and concern for the board). This board appears to have been established as a result of the 1975 New York City "default scare," which awakened the public to the realization that municipal bond issues, previously considered riskless, were not.

• Colleges and Universities

Colleges and universities that issue tax-exempt debt are also subject to differing state legislation. Stewart and Lyon (1948) conducted a survey, one part of which was on the early history

of the legal authority for the creation of debt by state colleges and universities. There were very few issues before 1920. Tax-exempt debt issued directly by state-supported colleges and universities expanded slowly in the 1920s, as the states faced considerable litigation on the constitutionality of the issuances. Stewart and Lyon (1948, p. vi) additionally commented that

> ...in the decade of the 1920s the state legislatures often were reluctant to authorize directly-issued bonds because, even though the bonds were limited obligations payable only from revenues, it was felt that a moral obligation to pay could not be escaped and that such special debt in practice might endanger the state's general credit rating.

During the economic depression of the 1930s, the federal government's policy of subsidizing the construction of public buildings as a means of unemployment relief created a marked dissimilarity between public and private institutions. Private higher education found it difficult to secure construction funds and few institutions undertook plan expansion without donor support. Public institutions, on the other hand, received liberal federal grants and loans for new buildings (Russell, 1954).

By the 1940s, most of the legal controversy in principle had been resolved. The results of the study by Stewart and Lyon (1948) showed that most states constitutionally prohibited state institutions from issuing general-obligation bonds. Revenue bonds (limited-obligation debt) became the primary debt financing tool for self-liquidating projects, although this tool was not used to a great extent. Yet Stewart and Lyon also found that the issuance of limited-obligation debt differed widely throughout the states in response to the interpretation of the laws. A variety of methods developed whereby limited obligations could be created—variety in the types of security pledged and in the establishment of affiliated corporations and state authorities to issue the debt.

Stewart and Lyon's 1948 study ended at the dawn of the most significant capital expansion in the history of higher education—post-World War II to the late-1960s. But borrowing still was not the generally practiced method of financing capital plant (Millett, 1952). Private institutions generally acquired their capital plant by gift (through large individual gifts and/or capital campaigns). Public colleges and universities depended upon governmental appropriations to meet their plant requirements, especially for educational plants, although auxiliary-enterprise facilities (dormitories and dining halls, athletic facilities, and student unions) tended to be financed by borrowing (Millett, 1952). The expectation had been that when new plants were needed to replace obsolescent facilities or to expand existing facilities, these same sources could be depended upon to provide the needed funding. Russell (1954, p. 376) sums up the debt-financing attitude of this era:

> A debt (incurred because full funding was not in hand before undertaking new construction) is such a menace to the future stability of the

institution that every effort should be made to avoid it.

Other federal monies became available to higher education throughout the 1950s and into the 1960s. Congress approved large grants for scientific equipment (for "the Space Race"). Federally backed student-loan programs were created to improve more of the population's access to institutions with rising tuition. Many states also issued bonds as a way of guaranteeing loan certainty to eligible students having difficulty obtaining loan funds through commercial banks.

By the end of the 1960s, however, federal and state funding sources began to dwindle and private gifts were more difficult to obtain. Although new-plan and plant-expansion construction continued into the 1970s, it did so at a much lower level than in the 1950s, primarily because student demographic changes would not support more new dormitories and related facilities. Universities had to seek other funding sources for renovations of existing plants, student loans to serve the needs of the student population, equipment replacement (especially high technology equipment), and more-costly new construction needs. Reduced state, federal, and private support of higher education significantly affected the financing strategies of many colleges and universities, both public and private, especially those in more fiscally strapped states. Debt financing took on new importance for many institutions at the same time that the tax-exempt market as a whole experienced heightened governmental attention.

The Emergency Insured Student Loan Act of 1969 offered incentive payments to institutions providing student loans. But arbitrage (the earning of excess income from the investment of tax-exempt debt proceeds beyond legal limits) could have resulted, rendering the related debt of the institution taxable. The 1976 Tax Reform Act added to Section 103(a) (the section that exempts from taxation the interest earned on obligations of municipalities or political subdivisions) provided that "qualified scholarship funding bonds" for student loans were also tax-exempt (Internal Revenue Code Section 103(e)). In 1980, Congress reduced the amount of the incentive payments to institutions providing student loans. In addition, the recent Tax Reform Act of 1984 has placed constraints on institutions' abilities to issue tax-exempt debt by placing a state per-capita limit on student-loan issues and limiting industrial development bond issues.

The 1970s also marked the creation of new not-for-profit corporations, foundations, and bonding authorities to issue tax-exempt debt for the benefit of higher education institutions (both private and public), with some of the debt a state obligation and some a legal liability of the institution. State limitations on these entities (especially ceiling amounts) also may prove worrisome to universities as these limits are approached.

• Interest Rates

When entering the highly complex money market, many factors influence the price of money (or interest):

- The Federal Reserve Board's federal monetary policy.
- Governmental fiscal policy through taxation and spending policies and federal debt management activities.
- Investor expectations about inflation.
- The term of the security. Short-term rates tend to fluctuate much more widely than long-term rates. Usually long-term rates are higher than short-term rates (upward-sloping-yield curves). (Public Securities Association, 1982 and Moak, 1970.) But there are times, such as in recent years, when long-term rates were lower (downward-sloping-yield curves).
- Different grades of credit rating (independent, though somewhat subjective, measure of issue quality) reflecting interest-rate variation.
- The geographical scope of the market for the bonds, suggesting, for example, that (1) a broader (or national) market invites more competition, which has been linked with a lower interest cost (see discussion below); and (2) the association of tax-exempt entities (such as a university) with other larger entities (such as state governments) may positively or negatively affect the interest charged to the borrower (Moak, 1970).

Also, the statutes of many states limit the maximum interest rate that can be paid on bonds issued by a state or local government or political subdivision (Moak, 1970). These limits could also affect the coupon rate on any particular university issue.

Historically, the average interest rate charged to the borrower on an issue (net-interest cost) has been computed on the basis of *simple* interest, although premiums and discounts paid by the investors and other costs can be included. A more accurate net-interest cost using time-value of money (present value) concepts has been advocated by Moak (1970), the Public Securities Association (1982), and others, and is relatively easy to compute, but it has not yet been widely accepted. It is possible, though not proven empirically, that in some competitive bidding situations, a different bid choice should be made because of the difference between net-interest cost based on simple interest computations and interest cost based on present-value computations.

In general, interest rates have been extremely high since 1979, and, as noted by Magarrell (1981, p. 1), they "have put an important source of money out of reach for many colleges and universities... For some colleges and universities, especially the smaller ones, the rates are prohibitive." Some institutions are constrained by externally imposed interest-rate ceilings. In addition, smaller colleges and universities, like smaller local governments, do not carry the same geographical scope as larger entities for marketing the debt. Investors with less knowledge about the issue are likely to discount the debt (especially if regional image problems are extended to the issuer) "unless the yield is appreciably above that at which funds can be invested in superficially similar bonds" (Moak, 1970, p. 174). The volatile and high interest rates in recent years have

caused many college and university projects to be postponed, and those that could not be postponed have been financed by taking advantage of lower short-term borrowing rates with the expectation of refinancing the debt long-term at lower rates.

● The Form of Tax-Exempt Debt Issues

● Types of Collateral Supporting Tax-Exempt Debt

Municipal Debt. The first municipal revenue bond (a bond not backed by the full faith and credit of the organization as are general obligation bonds) was issued in 1897. However, these bonds were not used heavily until after World War II. Now, general-obligation bond and note issuances are declining, while revenue bonds and notes are being issued at an increasing rate. The Public Securities Association (1982, p. 16) states that "in 1980, revenue bonds accounted for 71% of all new long-term municipal issues." Some reasons given for the shift toward the use of revenue bonds and notes is suggested by Moak (1970):

1. decreased interest-rate differential between general obligation and revenue bonds (usually considered riskier) of the same basic quality,
2. creation of public authorities issuing bonds backed solely by specific revenue streams,
3. the approaching legal limits on general-obligation debt by state and local governments,
4. comparative ease of authorizing revenue bonds since no voter approval is required, and competitive bidding may not be required,
5. effort by many public officials to apportion cost based on user charges, not taxation, and
6. broadened concepts of public purpose.

As the use of revenue supported debt has expanded, so, too, has there been an expansion in the variety of types of pledged collateral used to support the revenue issue. The table below shows how issues may be secured.

Table 2.

Legal Collateral	Type of Debt
1. Net earned revenues of the project	Project revenue debt
2. Mortgage on revenue-producing property or other property if allowed by law	Limited-obligation debt
3. General property tax, legislative appropriation, or excise tax	Limited-obligation debt
4. Special assessments of fees	Limited-obligation debt

5. Lease-rental payments by corporations in an industrial development bond	Industrial development bond
6. Future debt proceeds	Bond-anticipation note
7. Lease arrangements	Lease

As additional security to the lender, the borrower may be required to "set aside" (pay to a trustee) a certain portion of the debt periodically (a mandatory sinking fund or debt-service reserve requirement) (Sharpe, 1978).

Creating bonding authorities that would lease facilities to an organization (municipality, other political subdivision, or nonprofit institution) was started in Pennsylvania in 1933. Often, the entity receiving the benefits of the bond issuance would be required to make lease payments from specific sources.

It has frequently been the case that *when the debt becomes due*, it is refinanced through the issuance of new debt. However, another development since 1946 is the use of advance refunding, where proceeds of issued debt are placed in escrow *pending redemption* of other debt on the first call or prepayment date. The interest is *not* tax-exempt. Advance refundings are ordinarily used to achieve interest savings, eliminate restrictive bond covenants, reorganize the maturity pattern, or consolidate debt. There tend to be volatile movements of bond refundings when municipal interest rates are low (Moak, 1970). New arbitrage regulations in the mid-1970s slowed advance refundings to a trickle. However, falling municipal interest rates, now lower than those in the late 1970s and early 1980s, have sparked renewed interest in advance refundings (Public Securities Association, 1982).

Colleges and Universities. Except for state restrictions against pledging certain property or income streams as collateral on revenue bonds and notes, colleges and universities issue similar types of financial instruments. Stewart and Lyon (1948) found that most states prohibit by constitution the issuance of general-obligation debt. In addition, "the borrowing practices of issuing special obligations, or revenue bonds, were found to differ widely throughout the country" (p. vi).

Until recently, an advantage of leasing arrangements over directly-issued bonds or notes was that rental payments under certain leases were allowable for reimbursement from the federal government under OMB Circular A-21, but principal and interest on debt were not (Kaiser, 1981). The A-21 rules have been revised, however, so that interest payments are now reimbursable on any facility bought or built with debt. For private colleges and universities, the lease-sublease arrangement with an authority is likely to be the most widely used method of security, but may be supplemented or replaced by other collateral forms including pledges of specific revenues, collateral funds using securities from unrestricted endowments, letters of credit, and other such forms of security.

● Methods of Debt Placement

By the end of the 1960s, debt marketing became important as competition heightened for the investor's dollar (Moak, 1970). There are two basic ways to market debt: private placement (the borrower and a small number of investors negotiate directly, with or without the advice of an investment or brokerage firm, to procure the lowest interest rates possible); and public placement, or competitive bidding (a number of investors submit sealed bids for the issue as constructed by the borrower, again with or without the assistance of a financial advisor, and the bid with the lowest net-interest cost wins). Each has advantages and disadvantages and a different set of costs.

A competitive bid involves preparing an extensive set of documents, some legal, and some to improve marketing by providing information to potential investors. If there are at least three or four bidders, a competitive bid can result in a lower net-interest cost to the borrower (see Sorenson, 1977).

On the other hand, privately negotiated sales need less extensive documentation, can be done relatively quickly, and the agreement may be amended with less difficulty than in competitive sale. However, private placements tend to result in higher interest costs, since "competition" is lacking (see, for example, Moak, 1970 for further discussion). Several studies have also examined the types of provisions that result from a private negotiation. Privately-placed issues tend to be riskier. Through private placement, borrowers are able to tailor provisions to meet the needs of lenders, increasing the probability of securing the funds. Lenders are willing to accept somewhat unusual features because they usually obtain fairly close control through stricter monitoring provisions (see Smith and Warner, 1970; Leftwich, 1983; and Shapiro and Wolf, 1972). These increased restrictions tend to be more costly to the borrower.

The choice of placement method depends on market conditions, size of the issue, novelty of the type of instrument, credit rating, frequency of offerings, and legal constraints. Large municipal issues (usually greater than $25 million) tend to be bid competitively since the size of the debt requires a greater number of investors. In addition, general-obligation debt is often required by law to be sold via competitive bids. If the economy has created situations where typical tax-exempt debt-investors do not have a large amount of funds for investment purposes, the demand for the debt will be low, making competitive bidding more difficult.

The perceived riskiness of any particular issue also influences the borrower's choice in marketing the debt. New instruments, lower credit ratings, non-national (and therefore not well known) borrowers, and less-frequent borrowers (lacking a debt history) increase perceived risk, which decreases the borrower's ability to use competitive bidding. Revenue bonds, (riskier than general-obligation bonds because specific revenues are pledged) tend to be sold via negotiation. Given these constraints, it is easy to see why negoti-

ated sales are the most common in the tax-exempt debt market, although Moak (1970) suggests that competitive bidding is on the rise.

• Independent Assurances

Tax-exempt debt has been subjected to much less governmental regulation than corporate debt, suggesting that investors will seek independent assessments of the issuer's ability to repay the debt. There are three types of assurances now being sought by lenders: (1) audited financial statements, (2) credit ratings, and (3) bond default insurance.

Independent Audits. Potential lenders are requesting audited financial statements as a condition for consideration of lending (Public Securities Association, 1982). The auditor's opinion on the fairness of the financial statements reinforces or discounts the lenders' assessment of the financial condition of the borrower.

Credit Ratings. Credit ratings are considered independent measures of debt quality. The two major rating agencies are Moody's and Standard & Poor's. The Public Securities Association (1982) notes that "because of the large number of different issues in the marketplace, bond ratings often play a greater role in the municipal securities market than in the corporate market" (p. 40). In 1980, 77.7% of new long-term municipal issues were rated (Public Securities Association, 1982).

Because of the increased importance of credit ratings for the marketability of municipal issues, a number of studies have been conducted to examine the effect of credit ratings on net interest cost, how changes in ratings affect interest rates, the predictive ability of ratings concerning default, and researchers' ability to predict credit ratings (to model the ratings decision). Peterson (1974) notes two trends concerning credit ratings. First, an increasing proportion of borrowers are being rated even though the ratings must be purchased. Second, lower-rated investment-grade securities are a growing proportion of the rated bonds. He continues, "still, about 10% of the dollar volume and 35% of the number of issues themselves are not rated. Thus, the small unrated bond continues to constitute a substantial part of the market" (p. 48).

Within the category of revenue bonds are college housing bonds, college student-loan bonds, and tax-exempt hospital revenue bonds (many large colleges and universities operate hospitals). The issuance of tax-exempt debt by hospitals has increased markedly within the past decade. Developing credit ratings for hospitals is much more complex, as are the debt agreements and provisions, due to inherent complexities relating to cost-accounting, third-party reimbursement, and market position.

Insurance Against Default. Another tool available for reducing the level of risk associated with a particular debt issue is bond default insurance. In 1971, the American Municipal Bond Assurance Corporation (AMBAC), a wholly owned subsidiary of MGIC

Investment Corporation, was formed to write noncancellable insurance policies covering interest and principal payments on new municipal bond issues. The objective is to obtain a lower net-interest cost for the issuer by improving the security. (However, the issuer pays for the insurance, which increases the cost of the debt.) Standard & Poor's assigns a AA rating to new insured municipal bond issues. In 1974, the Municipal Bond Insurance Association (MBIA), a pool of five insurers who share the risk, was established also to insure municipal bonds. Standard & Poor's has decided to assign a AAA rating to issues insured by MBIA (Sokaloff and Matthews, 1979). Moody's on the other hand, ignores the insurance feature when rating issues (Public Securities Association, 1982). There do not appear to be any publicly available statistics on the number of or types of tax-exempt issuers purchasing default insurance.

• Actors

There are many actors involved in the issuance of tax-exempt debt:

Executive Officers and Governing Boards, who develop and approve drafts of board resolutions stating the amount needed and basic provisions to be included in the agreement. As the sale approaches, the board approves the final resolution to issue debt.

Advisors/Underwriters/Purchasers, employed by some institutions as financial advisors.

The Glass-Steagall Act of 1933 prohibited commercial banks from underwriting and trading in municipal revenue bonds and corporate securities. However, the federal banking authority now allows commercial banks to underwrite housing and education revenue bonds, about 40% of all revenue bonds issued (Public Securities Association, 1982). A study by Rogowski (1980) suggested that permitting commercial banks to underwrite college bonds has caused more competition (more bids) that has led to materially lower issuer borrowing costs.

As the profits of commercial banks and property insurance companies vary, so, too, does their participation in the tax-exempt debt market. Hendershott and Koch (1977) report that, in the 1960s, commercial banks (which prefer short- to medium-term securities for liquidity purposes) absorbed 68% of the net increase in tax-exempt securities. In the early 1970s, this fell to 41% while property insurance companies (which prefer longer-term securities) and individuals increased their relative shares. By the mid-1970s, commercial banks' participation fell to 18% with property insurance at 15% and individuals at 65%. Individuals' investment in tax-exempt debt, on the other hand, is sensitive to interest-rate movements: The higher the individual's marginal tax rate, the more attractive are tax-exempt securities, but demand can also be induced by raising tax-exempt interest rates.

Governmental Agencies. Under current SEC regulations, tax-exempt bonds are subject to disclosure requirements for completeness and materiality. In addition, many state institutions must receive approval from the state government before issuing debt, or at

least notify the government of their intent to sell. Also, the state government usually maintains close supervision (but at arm's length) over state bonding authorities that educational institutions may use to obtain tax-exempt debt financing.

Lawyers, who are involved in several different areas of the bond transaction. Bond counsel, hired by the issuer, determines whether or not the interest on bonds will be tax-exempt. The involvement of bond counsel has broadened considerably over the past twenty years in response to an increase in the variety and complexity of legal issues. Lawyers are often hired by investment banking firms to assure that there is full disclosure on the part of the issuer. The university's legal counsel assures that the bond transactions are in the best interest of the university, especially when dealing with bonds for educational facilities. The lender or trustee of the bonds may also hire an attorney to guarantee the validity and proper handling of all transactions.

Other Actors. At a point prior to selling the debt, Moody's and Standard & Poor's rating agencies may be contacted for a credit rating; bond-default insurance agencies may also be involved if such a provision is to be included; and auditors, usually certified public accountants, are required by potential investors or are suggested by underwriters and financial advisors to perform an audit and render an opinion on the fairness of the financial information, which will improve the marketability of the issue.

● The Content of Tax-Exempt Debt Agreements

A variety of documents usually comprise a debt issue. The note or bond agreement is in most cases the primary legal document and has many sections describing the debt instrument and defining any restrictions placed on the borrower.

● Terms to Maturity

Historically, general-obligation debt has carried longer terms to maturity (30 years or more) while revenue debt has been shorter in nature, often matching the expected life of the project. However, shifts began to occur after World War II. There was a heavy preponderance of general-obligation issues with maturities of 25 years or less, and major revenue bond issues had longer maturities.

Shorter-term debt (ranging from one to ten years in maturity) began growing at a faster rate in the 1960s, especially with the issuance of bond anticipation notes and term loans at commercial banks. Moak (1970) suggests several reasons for such a precipitous rise. State and local governments tend to use short- term interim financing when there is:

1. the need to meet financing costs in the preliminary phases of the project,
2. lack of certainty as to the ultimate total cost of the project,

3. an existing market condition that makes it inadvisable to use permanent financing immediately,
4. temporary unavailability of needed borrowing capacity (within the debt limit),
5. a necessity for refunding outstanding bonds to eliminate unduly restrictive covenants,
6. uncertainty as to the time at which construction will commence,
7. the need to determine the exact size of financial commitment from other governments or persons,
8. the pooling of costs of a number of smaller projects,
9. a need to carry projects until completion of permanent financing,
10. revenue growth that has not kept up with expenditure growth, thus creating working capital shortages. With a few exceptions, colleges and universities have faced similar financing problems.

• Call or Prepayment Provisions

The privilege of calling bonds (redeeming them prior to maturity) or prepaying notes becomes highly valuable to borrowers in terms of interest savings as the trend in interest rates changes. That is, the callability feature is most desirable to the issuer when interest rates appear to be high and volatile. The cost of this benefit to the issuer is a higher initial interest rate, since the lender's potential for capital gains is limited and future rates (returns) on invested proceeds may be lower.

Most municipal debt included the prepayment or call feature in the 1970s, a period of relatively high and volatile rates (Public Securities Association, 1982). Stewart and Lyon (1948) also found similar conditions in their study of state college and university debt prior to 1946. The call feature was included in debt agreements throughout the 1930s to 1946 when money rates reached an all-time low.

• Financial Restrictions

There are many kinds of financial restrictions, ranging from requirements to supply audited financial reports to requirements to maintain specific balance-sheet ratios to avoid default.

Audits. The Public Securities Association (1982) states that independent financial audits are becoming more common among larger tax-exempt issuers. This growth in the use of audits to improve reliability on the financial information appears to be at two levels. The request by lenders for audited statements as a condition for consideration of lending has been discussed. In addition, more debt agreements appear to require that audited financial data be submitted to the lenders on a timely basis until the debt is repaid. The provision is becoming more specific as to when reports are to be submitted, to whom, what is to be audited, by whom, and what other assurances are to be included.

Debt Service Coverage. The most useful financial ratio included in limited-obligation debt agreements is

debt-service coverage (pledged net revenues/total debt service for self-liquidating projects, pledged gross revenues/maximum or average debt service for debt backed by other revenue streams, and other variations) (Moak, 1970). A provision that the issuer maintain retrospective and/or prospective net revenues available for debt service equal to, for example, 1.50 or 2.00 times the present and prospective debt service has been required by lenders or underwriters to enhance the attractiveness of the debt. Coverage restrictions increase the margin of safety to lenders. Often, the coverage restriction is included as a prerequisite to the issuance of additional debt. A coverage restriction of 2.00 for colleges and universities and 1.25 for hospitals has become common, with some variation around these values.

Default Provisions and Remedies. An issuer can go into default under two conditions: failure to pay principal and interest when due and violation of a provision, such as not meeting a requirement to maintain a specified working-capital ratio. Both the conditions for default and the remedies to lenders have become relatively standard in the industry and are typically included in debt agreements.

Other Financial Restrictions. Several other common financial covenants of debt agreements are:

- limits on the issuance of additional bonds, such as the requirement to issue debt of equal standing (pari passu) or subordinate to the current issue.
- development and use of reserve funds for repair, replacement and maintenance of the facility.
- establishment of accounts on the books of the issuer and at the trustee bank to control project funds and meet other restrictions.
- restrictions prohibiting the sale of the project or a percentage of its assets until the debt is repaid.
- descriptions on the allocation of project revenues or the investment of debt proceeds (Moak, 1970 and Public Securities Association, 1982).

• Operating Restrictions

Lenders also can place restrictions on the borrowing institution that limit operating alternatives. For colleges and universities, several examples include (1) general covenants on the maintenance of adequate rates (e.g., tuition or housing) and asset insurance (fire, liability, or business interruption), (2) requirements that additional studies (such as project feasability studies) can be undertaken as a condition for borrowing, (3) provisions on the maintenance of accreditation status, and (4) covenants requiring the borrower to supply updated quarterly reports (such as specific financial data) to the lenders. As is the case with financial restrictions, lenders will tend to require operating restrictions that have lower monitoring costs.

• Other Considerations

A few other features concerning debt

add to the complexity of the debt-financing decision: the patterns for repaying principal on the debt (serial or term), the bond denomination (in the past $1,000, now often $5,000), registration of the bond as to principal and interest (as of January 1984, all tax-exempt bonds are to be fully registered), and the documents that are typically required (such as timetables, board resolutions, agreements with various parties, credit ratings, default insurance, official statements, and various certifications).

● SUMMARY

Significant structural changes in higher education and the financial environment have led to an increase in the magnitude and complexity of university debt financing. This paper discussed the changes that have occurred in the key dimensions of university debt financing: institutional dimensions, debt market conditions, and form and content variables. An understanding of these changes should allow the various actors in the process (executive officers, governing board, bond counsel, and many others) to understand better the modern environment and prepare for future changes.

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2 Investment Strategies and Alternative Sources of Revenue

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During the past two decades a gradual shift has taken place in the funding pattern of public higher education in this country. Traditional support from federal, state and local government has come into strong competition with other social programs for finite financial resources. The federal government has considerably narrowed its responsibilities to higher education at the same time that state and local governments have been limiting their levels of support. The effect in the majority of instances has been a decrease in the percentage of total resources allocated to higher education.

In response to this evolving pattern, our institutions, in many instances, have taken remedial actions in three major areas; student fees, general expenditures, and "outside" income. It has been argued that student-fee increases during this period either have already or are now beginning to limit access to higher education. (Such adverse effect on enrollments may very well have been "masked," particularly in the past several years, by increased enrollment pressures that characteristically take place during periods of economic recession.) In any event, this source of institutional funding will be limited as competition for a declining number of high school graduates during the 80's and early 90's becomes more acute.

Reductions in expenditures have been a way of life during the past several years at many universities and colleges. The expenditures cut most severely have been those for equipment and plant maintenance. The purchase of new, state-of-the-art equipment, books and other materials has been either deferred or greatly reduced, and equipment replacement programs have been set aside. Needed maintenance and facility updating have also been the targets of severe cuts, at a time of accumulated and urgent needs for energy modification, systems upgrading (including telecommunications and computers),

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facility accessibility, and potential liabilities for our asbestos heritage.

With reference to outside income, institutions have begun to increase their fund-raising efforts and have developed a far better understanding of cash management than they had a decade ago. Colleges today have far more sophistication in managing institutional investments. In addition, there have been a number of financial initiatives between higher education institutions and the private sector, particularly in the high-technology area. These "beachhead" activities should prove most helpful (in the long run) in developing a strong and broadened relationship between education and business.

Institutions are becoming more aware of the importance of outside income. To take fullest advantage of opportunities available to generate such income, however, they must be knowledgeable about tax laws, financing instruments, partnerships, and other possibilities available to them. This will involve a substantial commitment of time and effort and will directly affect the future stability of state systems of higher education.

● Debt Financing

Just as we have had to learn how to live with "expensive" energy in the past decade, so will we be forced to deal with expensive money in the future. Existing and new tax laws, however, have brought dramatic changes in debt financing, which offer substantial opportunities for all institutions of higher education, public as well as private. New financial approaches enable institutions and investors to take the fullest advantage of this circumstance. In the following sections several of these approaches will be discussed. Before turning to that discussion, a brief description of the economic environment might be helpful. The simplest way to do this is through the use of the yield curve.

● The Yield Curve

This curve compares the rate of interest with the maturity of the outstanding debt. Typically the yield curve is upward-sloping, meaning that the interest rate rises as the maturity of the debt instrument increases. The angle of slope is in direct response to investors' expectations of inflation as time passes. A temporary aberration is infrequently encountered where the opposite situation is true, (that is, when shorter maturities command higher yields than long-term paper). This is called an "inverted yield curve." In the past two decades, the entire yield curve has, on the average, shifted upward due in large part to inflationary expectations. And as this shift takes place, while the ratio between short-term debt and long-term debt remains approximately the same, the actual dollar differences become very considerable due to the compounding effect of higher interest rates.

In the normal yield curves experienced well into the 1960's, yield on a 30-year tax-exempt debt might have been as low as 3% or on a one-year debt, 1.5%. Assuming that the 30-year debt rate presently is 12%, the one-year debt rate would be about 6%, or four times what it was only a short time ago.

When the cost of debt is examined on the basis of $1 million of debt being paid off over a 30-year period, at the earlier rates of 3% as opposed to 1.5%, the interest costs would be $524,000 compared to $245,000. Taking the same debt and pay-out period and using present rates, at 12% the cost would be $2,713,000 and at 6%, $1,168,000! The point of this illustration is that with the earlier rates the difference in cost of interest, comparing a 30-year and 1-year debt, is comparatively modest, less than $300,000. By contrast, in contemporary circumstances the difference in costs would be $1.5 million. This illustrates the extreme importance of the difference between short-term and long-term interest rates in today's market.

Obviously this illustration is over-simplistic, but it makes the point. The challenge is to capture short-term interest rates with as much long-term financing stability as possible. This is known as moving down on the yield curve.

There are a number of approaches to achieve "the best of both worlds": long-term financing with short-term interest rates. To understand these approaches, some of the financial jargon should be explained.

● Calls And Puts

At the time bonds are issued, conditions relating to their redemption are also established. One such common feature is the condition under which the issuer may take back the bonds or any portion thereof — the "call" provision. Call provisions are for the convenience of the issuer rather than the buyer, and thus the value of the bonds is normally reduced to some extent when call provisions are included as a condition of issuance. Likewise, interest-rate costs are increased by such provisions. Call provisions are used when the issuer wants to reserve the right to retire bonds early, either with other borrowed funds that might be obtained in the future at lower interest rates, or with unexpected revenues. On the other hand the buyer's right to redeem the bonds before final maturity — or to "put" the bond back to the issuer — is a new and growing feature being incorporated into certain bond issues.

Puts are clearly to the advantage of the buyer and typically involve a lower interest rate. An important variable in put provisions, of course, is the period of time during which they may be exercised, which can vary from daily to annually or longer. The shorter the period of time that the put can be exercised, the greater the value to the buyer. This added flexibility is paid for through lower interest yields. A 30-year bond with a one-month put should parallel the yield behavior of a one-month fixed-rate note. With such put provisions, if the yield-curve trend is upward, then the bond holders

will want their yields to reflect such increases. If interest rates are fixed, then the holders typically will put their bonds back to the issuer at the first available opportunity. If the yield-curve trend is downward, the issuer will certainly consider calling the bonds and reissuing them at a lower rate if possible. To counteract either of these actions, put bond rates usually are established with a floating interest rate locked to some index that tracks the market. Normally such indices are within a range to allow for some accommodation of short-term fluctuations in the market demand at the time the issuer must re-enter the market to re-sell any bonds which have been put. The issuer has a choice in using debt: either pay higher rates with longer maturities or lower variable rates with shorter selected maturities.

● CREDIT RATINGS

The ability to issue debt is a direct function of the credit-worthiness of the issuer. The traditional way to determine the quality of a bond issue is its rating. While there are a number of firms that offer a rating service to issuers, Standard and Poor's Corporation and Moody's Investors Services, Inc. are the two most frequently used. Occasionally, an underwriter can place debt without a rating, typically for a well-known issuer with minimal apparent risk, and when the sale is open only to a few sophisticated buyers.

The issuer and the underwriter go to great effort to achieve as high a rating as possible for the issuer. This strategy enables them to market the debt with the lowest possible interest rates. This process can be very demanding and time-consuming, depending on the circumstances and history of the organization being rated. The factors examined by the rating agencies can vary from time to time and among organizations. However, usually, the following items will be examined in rating a college or university:

- **Quality of Service** — The rating agencies normally look to the same statistics that a prospective student might examine, such as the number of Ph.D.'s as a percentage of the total faculty, the number of books in the library, and the percentage of applicants accepted and the condition of the physical plant.

- **Costs** — Tuition and room-and-board costs in relation to other universities will be examined and related to the quality of service factors.

- **Trends and Prospects** — The rating agencies are well aware of the demographic trends. There are statistics showing over a 30% decrease in the traditional college-age population by 1994. The agencies will be concerned with the plans an institution has to position itself for the future.

The prudent use of debt to improve facilities can improve a rating in the long run, by strengthening the variables used by rating agencies.

Typically, a university will pledge a certain portion of its "business" revenue to the bondholders. For instance, dormitory fees will often be used as the source of repayment for a dormitory-debt issue, with dining-hall revenue used to secure another issue. The rating agency will assess the reliability of the revenues pledged.

● Insurance

A new strategy is to purchase insurance to guarantee the payment of principal and interest to the holders of a bond issue. When the issuer acquires insurance, the national rating agencies, upon request, will normally assign their highest rating, AAA, assuring a favorable market and rate. A question must be answered before buying such insurance: "Is the expenditure cost-effective?" Will the issuer at least make up the cost of the insurance through the difference in the selling price (interest rate) of the bonds? This, of course, depends among other things on the current market, the financial strength of the issuer as reflected in its rating without the "credit enhancement" provided by the insurance, and the cost of the insurance. The rates for such insurance may vary from as little as 5 to 10 basic points (0.05% to 0.10%) to several percent. The cost to the issuer of bonds rated from AAA to unrated bonds also can vary tremendously.

While there are several insurance companies and other firms now specializing in this kind of insurance, banks continue to be a major source of bond insurance through their letters of credit. (In recent years there is growing interest by foreign banks in this market.) In such instances the rating of a bond issue backed by a bank letter of credit guaranteeing timely repayment of interest and principal assumes the rating of that bank. (Presently there are only two AAA banks in this country as rated by Standard and Poor's. However, because of the apparently stiffer standards being adopted by the rating agencies, the differences in selling price between AAA and AA bonds is currently slight.)

There are a number of insurance programs available through or funded by the federal government, its agencies and federally backed agencies (for example, Federal Housing Administration, Farmers' Home Administration, Veterans' Administration and The National Consumer Cooperative Bank). Eligibility for this insurance depends upon the purpose of the debt and the type of issuer.

● Positive Arbitrage

By investing in secure instruments at higher rates than those obtained at the time of initial borrowing, and with no expenses, a profit should be assured. This is called "positive arbitrage." There are a number of opportunities for tax-exempt organizations such as

universities and colleges to offset some of the costs of issuing debt through positive arbitrage. These are provided either by law or by administrative regulations. For example, money raised by debt incurred to construct facilities must be spent within three years of the borrowing. If an institution borrows the total amount of funds needed to construct a facility before starting to build it, it can invest these funds in secure taxable instruments, for example, treasury bills. Returns on this investment can accrue to the institution while construction goes on.

Another approach is to issue sufficient debt to establish a fully funded debt-service reserve. Under Internal Revenue Service regulations, up to 15% of the issued debt may be invested for the entire term of the debt at a taxable rate. Positive arbitrage opportunities should be fully exercised under the rules of the IRS.

● Tax-Exempt Commercial Paper

Tax-exempt commercial paper is a financing instrument whose use has grown tremendously in the past ten years. This instrument is identical to commercial paper except that its issuers enjoy a tax-exempt status. The maturity of the paper can vary from a week to 270 days, but normally the paper is issued for 30, 60 or 90 days. There are three New York brokerage firms that make major markets in this paper, and perhaps ten others that trade in it. This paper is purchased by corporations, money-market funds, and other funds that need short-term tax-exempt investments.

A major difference between this instrument and demand notes (instruments or loans that may be redeemed at any time) is that the same quality paper traditionally sells for about 50 basis points less than demand notes, and the paper must be reissued a number of times during each year of a debt program. By the same token, the portion of demand notes that are put also would have to be reissued each year. The annual charge for reissuing the paper is typically the same regardless of the number of times it must be done in any given year. A clear advantage in flexibility is gained by frequently reissuing the paper. Through this strategy the amount of outstanding debt can be adjusted readily upward or downward, depending upon the needs of the programs. Shifts can also be made in lengths of maturities upon reissue, to take advantage of short-term inversions in the yield curves of the various maturity periods.

● Variable-Rate Demand Note

Variable-rate notes can be issued with puts of a fixed or variable duration and with specified maturities to obtain low interest rates for short-term instruments. The yields are "locked" to some specific market index. A good index will minimize the risk for the

notes that will be put when market yields increase. If notes are put, the issuer will then have to re-enter the market and sell the notes again at a fully competitive market price. Costs to the underwriter and the issuer are a factor to be considered when engaging frequently in this activity. Holders of large blocks of such notes are in a position to negotiate the yields to some extent when they think the current yields do not accurately reflect the market. This makes the selection of an appropriate market index and its judicious application most important.

● Low Floaters

A variable-rate demand bond that has a seven-day put and a long-term maturity of 50 to 10 or more years is commonly called a "low floater." This instrument is a way of avoiding high-interest, fixed-rate, long-term financing. The issuer is financed at a considerably lower rate of interest than the current long-term fixed-rate market and may establish conditions of borrowing that permit converting this instrument to a fixed rate, should that market prove superior.

● Variable- and Fixed-Rate Bonds

Elements of a floater and fixed-rate bond issue can be combined into one master indenture agreement, with provisions to enable the issuer to move from the variable-rate to the fixed-rate bond. A number of conditions can be defined to determine when this shift is permitted and whether the shift is automatic, tied to a market index or triggered at the discretion of the issuer.

● Interest-Rate Swaps

When variable-rate debts are issued, interest rates may rise and increase the cost of the program. Vehicles are available, however, to hedge against such increases. One approach is to fix the interest rate through an interest-rate swap. In such a transaction each of two parties agrees to exchange (swap) the interest payments due on its own debt for the interest payments due on the other's debt, with no exchange of principal debt. By matching parties with differing relative financing advantages in different markets, including European markets, the effective borrowing costs for each can be reduced.

A second strategy may be used to capitalize on the rate advantage of floating-rate instruments without incurring the risks associated with variable rates. Institutions can enter into agreements with agencies such as commercial banks, which have access to fixed-rate funds but which would prefer to borrow at a floating rate. By developing an exchange agreement, the issuer can realize a lower fixed-rate cost of funds than the rate

available in the traditional fixed-rate market. At the same time, the issuer avoids the variable-interest-rate risk associated with the short-term market.

● Certificates of Participation

A debt-issuance program, developed to accommodate California laws limiting the type and amount of debt the state could undertake, is now being used on a fairly broad basis in this country. The program is called "Certificates of Participation." One of its important features is that the debt is considered off-book since it is basically a lease-purchase. The "debt" is issued in the form of certificates by a trustee, generally a bank, through an underwriter. The certificates entitle the holder to the return of interest and principal over the period specified. In case of default, the certificate holder is awarded an appropriate portion of the property for which the debt was issued.

The funds raised through the sale of the certificates are made available to the issuer by the trustee for the purpose set forth in the certificate program. The issuer gains ownership of the purchased asset unless there is a default. The time length of the certificates varies according to their purpose. These programs are a convenient way of acquiring much-needed equipment, or buildings where statutory limitations preclude debt-financing. While this is not considered debt against the issuer, when that issuer's finances are reviewed the outstanding payments certainly merit a footnote in any financial statement.

● Liquidity

With the advent of puts, "liquidity insurance" may be desirable. If a bond holder elects to put a bond, the underwriter must then enter the market to sell the bond again. When dealing with tax-exempt commercial paper, the underwriter must continue to market new paper. When the underwriter enters the market either to "roll-over" or replace bonds, notes, or paper, the marketability of the issue may be temporarily or permanently gone. The insurer must step in and take the issue in this circumstance. However, if this situation is protracted, the interest rate to the issuer is usually increased beyond the prime rate until the problem is resolved. With instruments such as low floaters and tax-exempt commercial paper, liquidity insurance is an important part of insuring and rating the issue.

● Present Value

In reviewing existing or new debt financing, a "present value" consideration becomes critically important. Present value simply provides a way

to compare "apples to apples" when making decisions on present and future dollars. For example, suppose an institution is considering investing in a new telecommunications system that will cost $5 million in today's dollars. It has the funds to buy the system and must decide whether to pay for the system now and avoid future price increases, or to invest the $5 million and rent the necessary equipment. It also must decide whether probable increases in rental costs make it desirable to issue debt (or certificates of participation) for $5 million and buy the system, assuming the interest paid for the $5 million debt is less of an expenditure than the anticipated return on its investment of the $5 million it has in hand. In this particular illustration, using the Treasury Bill rates for the cost-escalator and current interest rates for tax-exempt debt, the issuance of debt for the purchase of such systems is quite financially attractive, and is an outright savings over cash purchase. It is extremely important in making any projection of cost that present value be an integral part of any calculation.

● Restructuring, Defeasing and Reissuing Debt

With the advent of expensive money, institutions with debt outstanding, regardless of when issued, should reexamine such debt on a frequent basis. Certainly fixed-interest debt issued in the early 1980s should be scrutinized. Outstanding debt, because of restrictive conditions, may be advantageously paid off or reissued (the bonds "defeased"), particularly if new debt is needed. If there is outstanding debt, new debt would be subordinated to it. The difference in the cost of interest between a subordinated and an unsubordinated issue may be more than enough to make up for the loss of a lower interest rate on an earlier issue.

"Sinking funds" are revenues set aside for anticipated expenses. These reserves can accumulate, and they sometimes represent an attractive financial opportunity for an institution. This may be especially true as debt issues approach their maturity. If fully invested at the current taxable yields, there may be sufficient present value in the reserve to pay off the remaining debt on schedule, eliminating additional future debt-service payments. In some situations, institutions actually might derive additional revenue from sinking funds.

A number of considerations should be kept in mind when examining debt structure. Certainly one factor to consider is the present and future cost of debt to the institution. Changing circumstances of the market as well as new opportunities through tax law revisions and various interpretations may create substantial financial benefits to an institution that restructures debt or issues additional debt. Greater flexibility in the administration of debt may be another reason to reissue existing bonds.

Debt maturities are also an important consideration. Short-term and mid-term financing, longer maturities with short-term variable rates, and various other programs may be mixed together in an effort to stabilize fluctuating interest rates. Often in the past, institutions have acquired the major portion of their equipment through long-term 30- to 40-year new-building financing. Long before these bonds were paid off, however, most of the equipment has either worn out or become technologically obsolete. Institutions should seek alternative arrangements for financing equipment required for any facility construction, expansion, or renovation. By financing the equipment based on a more reasonable life expectancy, reduced interest rates may be obtained. Short-term financing may be arranged either as a separate debt program, as a component of the facility borrowing program, or through a state pool of equipment funds made available under prearranged debt conditions.

● Renovation and Construction Borrowing

Institutions may gain financial advantages by creating debt previously treated as internal loans. Annual renovations are an example of such potential capitalization. Although funds for renovation may be available at the beginning of a fiscal year, it may be possible to issue one-year Revenue Anticipation Notes (RAN) at tax-exempt rates. Institutions then can invest the local money that would have been used for renovation in prudent taxable instruments for the year, a positive arbitrage strategy that yields additional income.

● Endowments

Endowments can provide a vehicle for additional institutional financial opportunities, with due attention to IRS regulations governing the use of tax-exempt contributions. It is difficult to generalize about this use of endowments because of the numerous legal factors involved, but certainly such funds can contribute to assessments of an institution's credit-worthiness.

● Institution-Private Enterprise Partnerships

Many institutions are presently examining areas of joint financial interest with private enterprise, particularly in the high-technology fields. While there are a number of academic issues that complicate such partnerships, the potential benefits of joining together a taxable enterprise and a tax-exempt entity justify the examination of such arrangements. Syndication is an example of cooperation between institutions and private enterprise.

With certain projects, it is advantageous to sell to limited partners a portion of the equity, or ownership, of a project. Typical would be a for-profit project, with both tax benefits on the front and a residual value or appreciation at the conclusion of the project. Syndication is a good vehicle to consider when institutions want to develop for-profit ventures, wish to limit their capital input, and have no need for the tax benefits involved. The university would assume the role of general partner and solicit capital from limited partners. The limited partners receive the majority of benefits from the partnership in its early years, including tax advantages from their investments. Once the limited partners have received cash distributions equal to the sum of their capital contributions, the benefits and ownership of the development are divided equally between the limited and general partners. This structure treats all parties fairly and, at the same time, creates incentives for the general partner to perform all of its responsibilities in an efficient and timely manner. In addition, the structure raises the maximum amount of equity permitted under law, while rewarding the general partner with a high percentage of the residual value of the development.

Syndication is an attractive means of financing office buildings, elderly housing, multifamily housing, hotels, condominiums, golf courses and other real estate projects. An institution should be cognizant of any limitations under its charter before undertaking a for-profit project.

● Summary

The intent of the preceding presentation is to emphasize to those responsible for financing colleges and universities the importance of effective debt management. Traditional debt financing was based on low interest rates and undertaken in spite of a host of legal constraints. Today, institutional debt-financing may provide opportunities to make money. The information presented is introductory and is intended to alert financial planners to the range of possible funding sources.

As government sources of support become more limited, state governments should be encouraged to change outmoded legal restrictions on institutional finances in lieu of increased appropriations. Indeed, governments might even assist institutions in gaining access to debt instruments. The insuring of debt also would assist our institutions. The net effect of such actions would be an additional financial subsidy to higher education, assuming institutional administrators and state higher education planners are knowledgeable enough to take the fullest advantage of such actions.

Taking Advantage of State and Federal Tax Laws

3

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Introduction

The current state of the nation has brought into sharp focus the need for colleges and universities to develop sources of financial support beyond those traditionally relied upon. The long-standing triad of private philanthropy, government subsidy and student tuition is no longer sufficient to ensure institutional stability, viability and vitality. Institutions must compete for their fair shares of an increasingly subdivided economic pie, while shifting public policies and changing demographics instigate new and unanticipated pressures. Not only are particular institutions threatened, but entire categories of schools face questionable futures. Perhaps most important, students who, until the mid-1980s, were reasonably assured of both access and choice may find themselves sharply circumscribed on both counts, depending upon how much of the deficit reduction burden is imposed on the American higher education community.

While there are ways institutions can protect and enhance their existing sources of financial support, to ensure survival and growth, institutions must learn to identify new sources of financing and strategies for putting them to use. Many of these strategies, while commonly used in the for-profit and parts of the nonprofit sectors, have only recently been recognized for their value to higher education.

Colleges and universities benefit from provisions of federal and state law that exempt them from most forms of taxation. Equally important, the tax laws afford significant tax benefits to an institution's donors. Discussion in the following pages reveals how institutions can capitalize upon their preferred tax status beyond the customary solicitation of alumni and philanthropic giving, examine the costs to the institution of that tax status, and explores ways to recover those costs through alternative financing mechanisms.

Every one of the tax-based financing programs and options described in the following pages depends upon specific provisions of federal, and in some cases state, law. Because of the volatile nature of the law in this area, these examples should be considered in the context of state law in effect of this writing. Changes in the law would require changes in the examples. Any of these approaches should be subjected to thorough review by qualified legal and accounting personnel. The involvement of such counsel will assure that all aspects of current law are ascertained, and that the interests of the institution and the public are adequately protected.

● Part I. Using The Tax Exemption

Traditionally, the tax-exempt status of colleges and universities has been used as a way to encourage individuals, corporations and foundations to contribute to their support. In the case of individuals and corporations, tax-exempt status under Section 501(c)(3) of the Internal Revenue Code affords a charitable deduction in the amount of the contribution from their gross income, in effect making the government a partner in the donation. For a foundation, the rule is somewhat different: since like the institution it is already tax-exempt, the benefit afforded through the tax laws is the requirement that foundation support can only (with certain very limited exceptions, such as scholarships and fellowships) go to entities exempt under Section 501(c)(3). This restriction channels large amounts of funds to colleges and other similarly tax-exempt entities.

But these traditional uses of the tax exemption do not exhaust of the possibilities. Changes in the tax laws and in general, economic conditions, have generated other opportunities to use these provisions for the greater good of an institution. Those who must manage the financing of higher education, whether from within the institution or external to it, should understand these mechanisms.

● A. Bond Issues

The alternative financing approach most commonly used by colleges and universities has historically been the exempt bond issue. Based upon Constitutional principles, the law has long recognized that income derived from financial obligations of the states and their instrumentalities is not subject to federal tax. Thus, when states either issue directly or authorize the issuance of bonds to support colleges and universities, independent as well as public, the interest rate necessary to secure a market for these instruments is substantially less than that for securities whose interest is taxable.

Traditionally, most bonded debt to support higher education activities has been in the form of general obligation bonds that put the full faith and credit of the state behind the obligation. In this mechanism, used to build most public institutions, the state was obliged to pay the interest and ultimately the principal of the bonds in the same way as the state might finance an office building or a bridge.

The general obligation bond represents just what its name implies: a general obligation on the resources of the state to pay the interest and repay the principal when due. A problem surfaces because every state has a defined debt limit which establishes the maximum amount of money the state can borrow and have outstanding at any given point in time. As capital construction has become more and more expensive, the ability of the states to issue more general obligation bonds has become constricted.

The revenue bond partially surmounts this problem. Most commonly used to finance highways and bridges, where user fees in the form of tolls can provide for the payment of interest and the ultimate repayment of the principal of the bonds, this approach also has been used by colleges and universities to finance auxiliary facilities, such as parking structures and sports complexes. The income of the facility constructed with the proceeds of the sale of the bond is pledged to service the bond obligation, thus avoiding the need for the state to appropriate funds out of the general treasury for this purpose. While some higher education revenue bonds are backed also by the full-faith-and-credit of the state (that is, if the pledged revenue is insufficient to pay the interest or repay the bonds the state is obliged to make up the difference) increasingly these bonds have been backed only by the resources of the facility built with its proceeds.

Revenue bonds are not appropriate when the facility to be constructed with bond proceeds has no independent, definable income-producing capacity. Thus, a library or instructional building cannot be funded with a revenue bond, since the building itself does not generate identifiable revenue (as compared, for example, to a parking garage which can be expected to generate a very specific amount of revenue during its useful life).

The solution is the issuance of bonds by the state (or an instrument of the state, such as a city, county or public authority), that do not financially obligate the state. These bonds have become a new force in financing higher education, especially for the independent institution that has lacked access to interest rates and bond proceeds available to public institutions. So-called municipal or authority bonds are issued by the state or its instrumentality (for example, a Higher Education Assistance Authority), on behalf of one or more identified institutions. The institutions receive the proceeds of the bonds, and they have the obligation to pay the interest and ultimately to repay the principal. Whether anyone will buy such bonds, and at what risk to the purchaser (which in turn significantly affects the interest rate), depends upon the financial capacity of the institution on whose behalf the bonds are issued and whether there are other guarantees of performance (payment of interest and principal when due). The use of the exempt bond issue opens entirely new financing options for colleges and universities, particularly those in the independent sector.

The major difficulty with this approach is the need to demonstrate enough financial strength to convince the two

national bond rating organizations (Moody's and Standard Poor) to issue a high rating to the institution's bonds. The impact of the decisions of the rating agencies, which are private organizations, is enormous: a triple-A rated bond will carry an interest rate significantly lower than that of a less well-rated issue, and indeed the latter may not be marketable at any price. While some institutions can meet the rigorous standards imposed by the rating organizations, many otherwise respectable institutions would be excluded from this source of capital were they to be required to rely solely on their own financial status. Institutions need a way to bolster their status that is satisfactory to the rating agency without inflating the cost of the issue.

Fortunately, colleges and universities that wish to take advantage of this source of financing can use several approaches. One technique is to guarantee that first claim on the revenues of the institution (primarily tuition) will be to service the bonds. However, because of state laws that prelude putting bondholders ahead of payroll obligations in the distribution of institutional income, such protection alone may not be deemed sufficient.

Another approach is to purchase commercially available bond insurance. This is simply an insurance policy that guarantees the payment of the bond obligations in the event the institution defaults. Such insurance is usually available at a cost of one or two percent of the total amount financed, and will generally assure a marketable bond issue. A few states have established public bond insurance to provide this service to eligible entities at a reduced cost, and in some states the government itself acts as a guarantor of last resort.

An institution can also enter into a relationship with a local financial institution (usually a savings and loan association) for an exchange of loans and certificates of deposit. In such an arrangement, the college borrows an amount equal to the bond issue and then redeposits the loan proceeds with the financial institution in the form of certificates of deposit held by a trustee for the benefit of the bondholders. As long as the institution is able to service the bonds, the loan and counterbalancing deposit remains untouched, but if the college defaults the amount on deposit is available to protect the bondholders, with the financial institution having a lien against the assets of the college. The actual cost is the interest difference between the loan from the financial institution and the interest earned on the certificates of deposit. Generally, that amount is about one percent, which may be less costly than commercially obtained bond insurance. Because the bondholders are protected by the trustee-held certificates of deposit, the bonds become far more marketable, and the interest on the bond issue may be reduced below the interest cost of the loan-deposit arrangement.

Long-term bond issues can finance new construction, or enable the institution to refinance existing capital debt. An important attribute of this method is the ability of institutions to sell bonds to alumni and friends at a special discount, still further improving their cost-effectiveness.

In the past, the only limitation on the use of the municipal bond approach was the prudence of the issuing agency and the ability of the ultimate borrowers to service the debt. However, the enormous growth in the use of this form of tax-free investment ultimately caused the Congress to rebel, with predictable results. Under the provisions of the 1984 Deficit Reduction Act, each state is limited in the volume of non-taxable financing it may issue, with the amount based upon a formula that takes into account population and economic strength. Many states, particularly those smaller ones that have fought hard to obtain new industry through the use of low-cost financing, have found themselves at or near their bond issue cap.

However, this limitation has less impact on higher education financing that might first be apparent. The provision capping state-bonded debt also excludes certain types of bond issues from the debt limitation. Chief among these is debt issued for supporting higher education. Therefore, bonds issued to support construction of a new facility or for acquiring needed equipment are not only outside the federally imposed cap, but because of restrictions on the rest of the market, may actually achieve some favor as the only relatively unrestricted investments. (While postsecondary construction and equipment replacement uses are outside of the cap, the financing of student loan programs was explicitly put within it. This was intended to reduce abuse in postsecondary loan programs, but it has also restricted access to financing other than the public till.)

• B. Equipment Financing

A variation of capital bond financing is the use of short-term tax-exempt securities to fund the acquisition of equipment needed for the operation of the college or university. Most institutions include the cost of equipment in their operating budgets, and many resort to commercial leasing to reduce the impact of acquiring costly items, particularly computers. The problem with this approach is that such leasing can be very costly; most commercial leases are priced at the prime interest rate plus at least one or two points. While a single institution could use bonds such as those described above to borrow for its equipment needs at an exempt rate of return, the annual equipment needs of all save the largest universities are not extensive enough to generate the normal $2-3 million necessary for a successful financing issue. For smaller offerings, the fixed costs tend to vitiate the economic advantages of this approach.

The solution is for a group of institutions to join together to secure the issue of pooled-equipment bonds. Using the techniques described above for capital bonds, the schools enter into an agreement with a public authority to authorize the issue of an aggregate amount of bonds, based upon the total annual needs of the cooperating institutions. (Because of nuances of state law, it is preferable to establish such a pooled fund among institutions located in the same state.) Once the bonds are issued, each school is entitled to draw against the proceeds to purchase the desired equipment, which is of course owned

entirely by that institution. At present, the interest rate on such securities ranges from about 6% to 8%, far below the cost of commercial leasing. Such bonds may be marketed publicly, to alumni and friends of the college, or placed privately. Several investment bankers now specialize in such issues.

• C. Arbitrage

The cost of capital bonds and short-term securities can be further reduced through the process of arbitrage, the reinvestment of the proceeds of a bond issue between the time the bonds are sold and the time the proceeds are actually needed for the project. Although the IRS has imposed time limits on such arbitrage activities and Congress has further restricted their use, the available time period is still long enough, particularly when applied to pooled equipment bonds, to substantially reduce the effective cost to the institutions. Arbitrage also can be used successfully in short-term financing, especially when coupled with a sophisticated cash management system.

• D. Contributions of Scientific Equipment

Historically, persons or corporations wishing to contribute to the college of their choice could only get the benefit of a standard charitable deduction of the current value of the donation (up to certain limits), regardless of whether they contributed cash or equipment. In response to the need to encourage the re-equipping of American colleges and universities with up-to-date scientific equipment, the 1981 Economic Recovery Act provides a special incentive for manufacturers to donate certain equipment. The technical explanation of the benefit is somewhat complex; the essential result is that, for substantially the same net cost to the donor the college can get significantly more benefit. But the technique is permitted only under certain conditions: the equipment must be for scientific use, it must be used by the institution for research or research training in the physical or biological sciences for at least 80% of the time, it must be manufactured by the donor, it must have been built within two years of the transfer, the institution must be the first user, and the institution must agree to restrict the use of the equipment in accordance with the limitations of the tax law. The Deficit Reduction Act originally would have eliminated the special benefits afforded through this program. However, Congress decided to continue it on a year-to-year basis. Its future beyond the current calendar year remains in some doubt.

• E. Tax Credit for Contract Research

As part of the current national interest in stimulating basic and applied research in American industry, Congress has passed an amendment to the tax laws that, for the first time, gives industries a tax credit for incremental research expenditures. Since the details are complex, only the broad strokes of the program are outlined here. In addition to being eligible for a credit for work done in the firm's own laboratories, research carried out under contract with a college or university is expressly included under the law and can provide the commercial firm with

a very significant tax benefit. This can encourage commercial entities to take better advantage of the capabilities of nearby institutions, and provide an economic stimulus to industry-college joint ventures. Research and Development Limited Partnerships (discussed below) in which the institution (and in some cases the state) is a participant, may obtain the benefits of this provision through research support contracts entered into with the institution proper. Note, however, that the credit is not available for research outside of the hard sciences, and remains in some jeopardy as a less-than-totally favored tax expenditure.

● Part II. Recovering The Costs Of The Tax Exemption

It is an enduring truth that what the government gives it may also take away. Certainly, in affording colleges and universities exemption from taxation the government has granted them a very substantial benefit. But the removal of most tax liability also removes access to certain benefits of the tax law. Most notable among these is the deduction allowed for the depreciation of capital facilities, both buildings and equipment. Depreciation is intended to allow the taxpayer to recover a portion of the original cost of the facility in the course of its statutorily defined useful life by reducing taxable income by an amount equal to the annual depreciation. While nonprofit and for-profit entities may treat depreciation in the same manner on their books, only the taxpaying entity benefits from deducting depreciation from gross income to reduce the net income upon which taxes are calculated. Thus, while depreciation serves a valuable accounting purpose for all organizations, in reflecting on their balance sheets an allocation for replacement of capital facilities, it serves the additional purpose for taxpaying entities of reducing their net taxable income.

Colleges and universities, because they pay no taxes on their exempt activities, cannot take advantage of this deduction. However, this does not prevent the property from depreciating at the same rate or requiring replacement on the same schedule as property held by a taxpayer. Billions of dollars of tax benefits are lost because institutions have been unable to reap the value of the depreciation allowance. However, an interesting characteristic of certain tax benefits, including depreciation, is that they can be sold. By applying the appropriate alternative financing techniques, this tax benefit can be turned to the advantage of the institution. However, recent changes in the tax laws have sharply curtailed the degree to which depreciation and similar tax benefits may be traded between parties to a transaction, and the individual transaction must be closely scrutinized to determine its tax consequences.

● A. The Sale-Leaseback

In recent years, a considerable number of tax-exempt organizations, including public agencies, have discovered a straightforward way to recover this value: the tax-exempt entity sells its building or equipment to an entity

that can use the depreciation deduction, usually a limited partnership especially established for this purpose. The limited partnership then leases the building or equipment back to the tax-exempt organization for the latter's exclusive and sole use, usually with a provision in the lease for the resale of the property back to the exempt entity at the end of the lease term. This has been a very effective way to transform the previously lost depreciation benefit into significant financial gain for the tax exempt entity. Since the limited partnership can use the depreciation allowed on the property as a tax shelter for its partners, the tax exempt entity provides the partnership with the full depreciation benefit deduction by selling the building. The partnership returns a portion of the value of that benefit to the institution in the form of reduced lease costs. Thus, a building may be sold to the limited partnership for $10 million, but the discounted value the college will have to pay out in lease costs over the fifteen years of the lease might be only $9 million. The $1 million difference is the college's share of the no-longer-dormant depreciation. A further benefit can be derived from leveraged-lease projects, where the limited partners put up only a small portion of the cash, with the rest coming from financing obtained by the partnership. Unlike the tax-exempt institution, the limited partnership can deduct the interest cost for the financing, providing further deductions, the benefit of which can be shared with the institution.

A primary advantage of this technique is the transformation of a fixed asset into cash. The proceeds of investing income from the sale of a campus building can assure meeting the lease payments while at the same time creating a dramatic improvement in the cash position of the institution. Sale-leaseback arrangements, particularly when coupled with significant leveraging, can be especially attractive for alumni and friends of the institution: a donor who might be expected to make a $5,000 cash donation might well be willing to put up ten times that amount to participate in a limited partnership acquiring a building from his or her alma mater on a sale-leaseback...

It should be noted that throughout this discussion we have talked about the sale of buildings, without ever mentioning the land upon which they sit. Because land is not depreciable, there is no advantage in including it in a sale-leaseback arrangement. Indeed, there are significant arguments for keeping the ownership of the land in the institution's name. First, in a few states only land that is owned by an educational institution as well as used for educational purposes is exempt from property taxes. A sale-leaseback that subjects the property to local taxation would vitiate the value of the new- found depreciation and other tax benefits! Second, by keeping title to the land, the institution can ensure that the owner- lessor of the building does nothing to it that is contrary to the interests of the institution. Thus, when the institution sells a building, it also enters into a lease with the new owner to allow the latter to use the institution's land: that lease can contain provisions strictly limiting the use of the land—and the buildings upon it—in accordance with the wishes of the institution. If the owner of the

building should subsequently go bankrupt or otherwise change hands, the ownership of the land upon which the building sits will protect the interests of the institution. Third, by keeping title to the land, the institution retains on its books its most substantial permanent asset, an item of consequence to donors, creditors and accreditors alike.

Sale-leaseback arrangements have been every bit as attractive to public institutions as to other tax-exempt organizations. Indeed, many local governments are using this same device to raise cash and decrease costs. In a growing number of communities, even City Hall has been sold to partnerships that in turn lease it back to the city for its use! Public colleges have been able to take advantage of the same benefits, and most states now allow such arrangements. (Such a sale-leaseback not only adds to the institution's finances, but is attractive to the state as a way to reduce pressure on the tax-generated budget.) However, sale-leasebacks of existing property have been sharply curtailed by the 1984 tax revisions. The considerable benefits that flowed to investors have been sharply curtailed by provisions that eliminate access to accelerated depreciation and otherwise make such arrangements rather less economically attractive that has been the case in the recent past. This does not mean, however, that sale-leasebacks are not a viable way of helping to finance an institution. They remain a useful weapon in the alternative financing arsenal, albeit with a somewhat reduced striking force. The key is whether the property sold and then leased back had previously been used for the purposes of the exempt organization. If this was the case, then the new restrictions apply. However, sale-leaseback arrangements are also useful for new construction, which avoid many of the limitations imposed on such transactions where the property was originally in use by the exempt organization. The use of tax-exempt bonds to finance a major portion of the cost of construction can be coupled with a sale-leaseback to improve the economic viability of a project. The institution may also be able to link such approaches with other forms of government assistance, such as Urban Development Action Grants (UDAG), which can significantly decrease the effective cost of the project. (UDAGs customarily provide from ten to twenty percent of the project cost, with an interest rate, over a thirty-year life, of about three percent.)

• B. Rehabilitation and Historic Preservation Tax Credits

In addition to the economic value of the depreciation allowance, past sale-leaseback arrangements have captured the newly enacted Rehabilitation and Preservation tax credits. In this case, a recurring institutional problem can become an asset: an old building in need of rehabilitation becomes more attractive as the target of a sale-leaseback arrangement. When a limited partnership, perhaps made up of alumni and friends, purchases the property from the college and rehabilitates it, it can benefit from the rehabilitation tax credit as well as the depreciation deduction and the deduction for interest costs. The older the building the better, as the rehabilitation tax credit increases with the age of

the structure: the credit for a building 30 to 39 years old is 15%, rising to 20% for buildings over 40 years of age, and to a full 25% of rehabilitation costs for "certified historic structures." The building must be at least thirty years old, at least three quarters of the building's external walls must be retained, and the rehabilitation must be "substantial." While rehabilitation tax credits are available only for property used for commercial or industrial purposes (which would include college operations), preservation credits can be used for any eligible structure. However, like the tax advantages arising out of sale-leasebacks of pre-existing property, the new tax provisions reduce the economic advantages arising out of this program (although they do not, as was feared, eliminate them).

• C. Energy Tax Credits

The 1981 Economic Recovery Act also encouraged investment in energy-saving equipment by providing yet another special tax credit. Structuring a mechanism to make this tax advantage of benefit to a college resembles the standard sale-leaseback. In this case, however, the college contracts with a for-profit entity, usually a limited partnership consisting of a general partner in the energy business and a number of limited partner investors to provide new energy-saving equipment or the upgrading or rehabilitation of existing equipment. Once the equipment is fully depreciated, it can be either donated or sold to the institution. In the former case, the partnership gets a charitable deduction on top of other tax benefits. Qualified equipment includes solar, wind or hydroelectric facilities, recycling equipment, and equipment used for "alternative energy sources." So far, this tax benefit remains generally available.

• D. Partnerships, Joint Ventures and Other Vehicles

While colleges and universities differ from for-profit organizations in many significant ways, they also share many attributes. Among these is the need for capital to advance research activities, and the capability to exploit discoveries to benefit the institution and enable it to better carry out its mission. In the past, the cost of research activities, whether basic or applied, was usually defrayed through a combination of government grants and contracts as well as philanthropic support. The latter often included gifts from industries that might ultimately benefit from the fruits of the research, but without any restrictions that would limit the use of any discoveries to the donor. Indeed, a limitation of that sort would change the nature of the gift and preclude the donor from deducting its value as a charitable contribution.

As the economics of higher education and industry have shifted, it is becoming increasingly apparent that the traditional means of financing institution-based research are no longer adequate to the rapidly changing technologies and particularly to the need for more sophisticated (and costly) equipment to carry out that research. Institutions are also recognizing that in many fields, such as elec-

tronics and biotechnology, their discoveries need to get into the market very quickly or be superseded by further advances. The traditions of patent protection and a leisurely recovery of royalties have been superseded in many fields by rushing a discovery to market in order to obtain a brief, but substantial economic advantage before the discovery is rendered obsolete.

The tax-exempt status of colleges and universities precludes them from directly taking advantage of the major attribute of our economic system: the ability to sell a share of ownership as a means of generating capital funds. American business is founded on the principle that passive participation through investment is the way to acquire a capital base. Obviously, a college cannot sell stock or take in partners in return for a share of its profits (assuming for a moment that such a thing as profits could exist in the context of an entire institution). The tax laws expressly forbid an entity exempt from taxation under Internal Revenue Code 501(c)(3) from distributing income (or profits) to anyone, except in direct recompense for goods or services. Thus, an institution can pay interest for the use of someone else's money, but it cannot sell stock and pay out dividends derived from its net income.

This limitation makes it more difficult to raise capital to fund the heavy front-end costs of research. Fortunately, there are ways through which a college or university can acquire such funds outside of the traditional routes of government largesse and private philanthropy, routes enhanced by evolutions in the nature of the economy, the tax laws and the character of scientific research.

An attractive technique that is being promoted by the U. S. Department of Commerce is the establishment of Research and Development Limited Partnerships. Through this device, the institution and one or more private entities (which may be corporations interested in the product of the research effort, investors seeking a share of the value to be developed, or both), establish a separate entity in the form of a limited partnership. The limited partnership is capitalized by the private parties, with the institution as the general (or managing) partner. The limited partnership then enters into a contract with the institution for the conduct of appropriate R&D activities, with the contract expressly providing for a sharing of the value generated by the research. This value may be in the form of royalties on inventions, the sharing of rights of use, or exclusivity arrangements. The limited partnership uses its capital to purchase equipment which it then leases to the institution to carry out its R&D program, enhancing the availability of state-of-the-art technology without the need to exhaust scarce institutional funds. The payment for the lease can be a share of the income generated by the discoveries, or a right of first commercial exploitation. The limited partnership can donate the equipment to the institution at the end of the lease term, affording itself a tax advantage and of course further benefiting the institution.

A similar configuration can be accomplished through the creation of a sub-

sidiary for-profit R&D corporation, although at present the tax laws favor the limited partnership form. In either case, the benefits of deductibility of interest costs, R&D and other of investment tax credits, as well as the ability to raise private capital without recourse to charitable funds, provide further advantages to this form of venture.

It is also possible for an institution to enter into a joint venture with a for-profit entity to develop and exploit commercially marketable inventions. The creation of a R&D limited partnership is one type of joint venture. The joint venturers share the costs, risks and potential profits in accordance with a contractual agreement: for example, the commercial partner may agree to provide the capital to acquire necessary equipment and facilities in return for a right of first commercial exploitation, with the institution receiving an agreed-upon royalty or percentage of the profits from such exploitation. A graphic representation of some of the types of relationships possible through these vehicles will be found at the end of this discussion.

In entering upon any of these relationships, it is important to be cognizant not only of their tax and economic consequences, but also the potential for conflict with federal (and to a lesser extent, state) antitrust laws. While the federal government has recently sought to encourage R&D efforts that in previous years might have been unacceptable to the Antitrust Division of the Department of Justice, it is still important to review the proposed relationship with great care to avoid the unexpected, and potentially costly, antitrust problem.

On the other hand, the traditional reluctance of business to enter into such relationships because of the risk of antitrust violations has been lessened by this change in government attitudes, which opens new opportunities for institution-industry cooperation. The several semiconductor research centers established at major universities by a consortium of semiconductor firms demonstrates how far this industry has advanced in overcoming its fear of automatic antitrust sanctions. However, the recent Supreme Court decision (Donovan V. San Antonio Metropolitan Transit Authority) raises the spectre of the extension of the coverage of the antitrust laws to the states, an outcome that could adversely affect the use of this vehicle.

● Summary

In today's highly competitive environment, colleges and universities can no longer afford to rely on traditional means of generating revenue and acquiring capital funds. Current economic conditions can be turned to the advantage of those institutions knowledgeable in the ways of the financial marketplace and willing to venture into alternative financing. While these approaches must be entered into with care, foresight and considerable professional guidance, expert advice and due caution can minimize risks and enhance benefits. The changes in the tax code that have been successively wrought in 1981 and 1984, and that are likely to occur during the tenure of the 99th Congress, substantially complicate the planning and implementation of tax-based alternative financing strategies. But those changes do

not obviate the opportunity to take advantage of the tax laws to improve the financial situation of both public and private postsecondary institutions.

They do, however, suggest the use of considerable care in the design and execution of any strategies in this arena.

Financing Scientific Equipment and Facilities: Evaluating the Alternatives

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Those involved in allocating fiscal resources at the state level are hearing increasing concern from the campuses about the state of equipment in our institutions of higher education. Most faculty members and administrators would agree that the shortage and obsolescence of research and instructional equipment are among the more pressing problems facing higher education today. Regrettably, we are confronted with this problem at a time when few colleges and universities are provided the additional fiscal resources to address it. This paper presents an overview of this problem, describes the experience of Virginia Tech, and develops a strategy for addressing the problem through innovative financing techniques.

A 1980 study conducted by the National Science Foundation found that the equipment in the laboratories and classrooms of colleges and universities was approximately twice the age of comparable equipment in industry. This means that higher education institutions are training students on equipment that is frequently obsolete. Upon entering commercial research laboratories or manufacturing operations, graduates must be retrained before they are able to contribute appropriately to the enterprises in which they are engaged. Perhaps more important, the contribution of higher education to national research and development initiatives is constrained. For example, new research initiatives often are not undertaken or are undertaken under less-than-optimal conditions, because institutions lack state-of-the art laboratory equipment.

If this serious national problem is allowed to continue, it is likely that the United States will find itself in a predicament similar to that of the late 1950s when the launching of Sputnik jolted the country out of its complacency. Obsolete and insufficient scientific equipment in our colleges and universities is jeopardizing the

country's relative position in international trade, defense, and in the world economic system.

What can our colleges and universities do to address this problem? When we at Virginia Tech examined this problem, we concluded that, despite increased recognition of equipment needs in the appropriations process, self-help was the only way we were going to make immediate and substantial progress. Even though legislative and federal appropriations have continued to grow, the rate of growth has greatly slowed and the fixed expenses of operating an institution of higher education (salaries, employee benefits, and utility costs) constitute a large portion of an institution's budget. Administrators who get down to the bottom line of the budget and attempt to find new monies for equipment frequently find very little to go around.

● THE STUDY: PART 1

At Virginia Tech, we assembled a small group within the university administration to chart a course of action that would enable us to upgrade the equipment in our laboratories and classrooms. Early in our deliberations we realized that we did not possess within the university all the expertise necessary to determine the most economical and efficient ways to address the equipment problem. First, we discovered that any discussion of financing equipment very quickly focuses on tax law. We do not have, and I suspect that very few institutions do, experts in tax law who understand the implications of investment tax credits, sale-leaseback arrangements, or any of the other financing schemes that we read about from time to time. Second, we found that any kind of deficit financing involves complex technical considerations of arbitrage law, which governs the extent and conditions under which money can be borrowed at a tax-exempt interest rate and reinvested for a period of time at a higher interest rate. We did not have anyone on our staff trained in this area. Third, we had been approached by donors and entrepreneurs wanting to enter into lease-gift arrangements in which the University would lease equipment and facilities for a certain number of years before it would be acquired as a gift. We had no way of really determining whether the economic cost-benefit of those arrangements would be a plus or a minus for the institution. We concluded very quickly that we needed help.

To obtain this help, we issued a Request for Proposal to employ a financial consulting firm. We sent RFPs to investment banks, bond counsel firms, financial consultants and "big eight" accounting firms. After reviewing the responses, we selected Peat, Marwick, and Mitchell's higher education consultant practice in New York. We selected an accounting firm rather than a financial consultant, investment bank, or bond counsel because we wanted a firm that could bring together expertise in real estate, taxation, financial analysis, and higher education.

As soon as we selected Peat, Marwick and Mitchell, we met to develop a plan. We began by asking the following questions: What is it that we need to do? What are our university's particular needs? What do we really want to find out about financing equipment and related facilities? Defining the plan at an early stage helps define what the study is going to cost.

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Because cost is always a factor, consider taking these several steps to minimize it.

First, use internal staff as much as possible. In the early stages of the study, much information has to be assembled, but it is not necessary to pay consultants to pull together information that staff members already have collected and/or compiled.

Second, set a timetable and insist that it be met. If the timetable is not met, the study can become interminable and very expensive.

Third, focus the study on your institution: forget about the rest of the world for a minute and think about what you really need to know.

Fourth, put together a small management group to oversee the study. This group might be composed of a senior financial staff member, a staff member from institutional research, and staff members from the legal counsel's office and the academic affairs office.

At Virginia Tech, we identified four components for our equipment financing study. First, we put together a general overview of the university that addressed the following questions: What is the corporate structure of the university? What are the university-related corporations (such as incorporated alumni associations, foundations, and athletic associations) that can participate in a financing venture? What are the benefits and the liabilities of setting up a for-profit subsidiary of a foundation or of the institution itself? What kind of partnership arrangements can be put together with alumni, or investors, and are they desirable? What are the various means of debt financing? Most institutions are well acquainted with issuing revenue bonds, usually for the dorm and dining systems. They are not as well acquainted with issuing industrial development bonds or tax-exempt commercial paper.

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Studies should examine the various financing vehicles available in the marketplace, such as lease financing, the tax-exempt municipal lease, sale-leaseback arrangements, and shared savings contracts. The study should also examine appropriations from the state and federal government, gifts and grants, equipment grant programs, and loan programs. Indirect cost recoveries also should be viewed as a possible financing vehicle. Consider methods of capturing indirect cost recoveries from research contracts and using those monies to finance equipment. Look at

private sector funding and corporate equipment gifts.

Many institutions are engaged in capital funds campaigns. Such ventures offer additional opportunities to address equipment needs. A number of manufacturers of scientific equipment have programs through which equipment can be obtained at greatly reduced or no costs. Make certain that manufacturer's development offices are fully aware of your institution's needs and corporate and government equipment programs.

● The Study: Part 2

The second part of the study was what we called an internal scan. The internal scan looks at the overall organizational structure of the university, programmatic developments and plans of the various colleges, physical plant resources, and the university's master plan. We took a very careful look at the financial condition of the institution. This was particularly important for us, because as we progressed in the study, debt issuers and donors asked us for detailed financial information. We looked at the university's longterm debt and carefully assessed the university's ability to undertake additional debt. We looked at lease commitments, an often overlooked financial liability. We found that no one had ever before pulled together all of the university's financial commitments.

We looked also at the availability of debt collateral. This is a very important consideration in debt financing because many debt issues require collateral.

● Sources Of Debt Collateral

Possible sources of collateral include auxiliary reserve funds and unrestricted endowment funds. Remember that the use of qualifying funds as collateral permits the institution to benefit from the funds in two ways. First, the funds, by serving as collateral, will allow the institution to borrow money. Second, the collateral, except in the event of default, is untouched. It costs nothing to use these funds as collateral.

The last and perhaps most important part of the internal scan is a look at a pay-back schedule for any debt that will be incurred.

● Planning For Debt Service

Remember that debt service represents future expense to the institution. Be very careful early in the study to identify your potential to pay back the money you borrow without putting the institution in a position where you mortgage the future. Also, work out an obsolescence schedule of the equipment you are going to finance. Nothing could be any less palatable than to have a piece of obsolete equipment that still has three years of debt service remaining. Never borrow

money for a period longer than the expected life of the equipment.

● The Study: Part 3

The third portion of the study we called an external scan. This was a part in which consultants played a large role. We looked at national economic trends, including inflation rates, interest-rate forecasts, and the tax-exempt debt market. We did a thorough analysis of federal tax provisions. We examined the implications of various financing arrangements to unrelated business income, investment tax credits, accelerated depreciation, and other considerations that require a very thorough understanding of federal and state tax codes. We looked at state-code provisions relating to the acquisition of real property and equipment by the institution — such things as the state's public procurement act, the industrial development bond act, the institution's authority to incur debt under the state code, and the state laws and regulations pertaining to facility construction. All of these things vary from state to state. Private institutions are one step ahead because they do not have to be concerned with a number of governmental considerations that can hinder innovating financing arrangements. Because we did have to obtain approvals from state government, we thought it important to have a respected national accounting firm standing behind us before we sent our proposals to the state government.

● The Study: Part 4

The fourth and final part of the study was an evaluation of financing scenarios, the specific financing arrangements and deals we wanted to look at. Again, outside help served us well. We looked at various building-acquisition plans and various equipment-acquisition plans with a view to the bottom-line cost of what we proposed, the complexity of doing it, the political risk involved in doing it, and the ability of the institution to control the ongoing contract.

● Controlling Financing Arrangements

An institution must be very careful in any financing arrangement not to lose control — its ability to manage the property or equipment once it is acquired. As a result of these concerns, you may decide to eliminate several financing arrangements that look good otherwise.

● Conclusions of the Study

This study took us about three months to complete. We then met with Peat, Marwick and Mitchell to see what conclusions we might draw. Several were apparent:

Survey

- First, we learned that acquiring equipment was a much less complex task than acquiring physical facilities. We decided to proceed with equipment financing first and lay aside facility projects for the present.

- Second, we found that purchase arrangements appeared preferable to lease arrangements for several reasons. Perhaps the most surprising was that leases and lease-purchase contracts frequently proved more costly over time than debt-financed purchases. The federal tax legislation that governs lease and sale-leaseback arrangements is very unsettled right now. Congress is considering several bills to correct perceived abuses that have resulted from some of the more exotic sale-leaseback deals. Third, the purchase arrangement seemed best to us because we did not have to grant a security interest in the equipment. We would not have to keep up with the equipment and go back to the leasing company every time we wanted to sell, trade, or relocate an item.

- Third, we found that it was better to use the university itself as the debt issuer rather than a university-related corporation such as alumni association, foundation, etc. This is a matter than undoubtedly will vary from state to state. In Virginia, charitable organizations cannot issue tax-exempt debt, nor does it appear they can issue industrial revenue bonds. This is not true in all states. But in Virginia, the university itself could realize savings by issuing tax-exempt debt. We also found that very exacting standards must be met by funds intended for use as collateral. Tax counsel is a must in these considerations.

- Fourth, we discovered as a part of the equipment issue, we could also refinance some existing facility debt we carried at a high interest rate — a debt we incurred about two years earlier when interest rates were much higher.

- And last, we concluded that the most cost-efficient way to finance the equipment would be through university-issued tax-exempt variable-rate demand notes.

The decision to issue debt in the name of the university was made after examining options for issuing the debt through a state agency such as a higher education facilities authority. This option, though discarded after preliminary conversations with state officials, remains a vehicle to be explored in the future. Use of a state level authority to issue debt could permit a consolidated equipment package to be put together for several institutions within a state. It may also avoid the need for individual institutions to collateralize equipment debt. Many institutions, particularly smaller or newer ones, will not have sufficient qualifying funds to serve as collateral.

● Securing the Financing

We proceeded immediately to prepare another Request for Proposal,

which we sent to investment banking firms and the large banks in Virginia. The RFP asked for proposals to finance up to $11,000,000 worth of equipment and $2,000,000 in facility debt.

When institutions put together debt-financing RFPs, there are several offices in the institution that likely will become involved — the Purchasing Department, Finance Office, and Legal Counsel. This is particularly true for public institutions.
From the proposals we received:

- We found, first, that the market was very good for higher-education debt. We received 14 responses to our RFP, from large national investment banks to banks in our region.

- Second, we found that some debt underwriters lacked knowledge of the laws and regulations governing tax-exempt debt issued by institutions of higher education. This suggests that one has to be very careful in assessing the level of expertise of the lender you select to issue your debt.

- Third, we found that some tough negotiation is required to structure that debt in such a way that the institution's use of its collateral is not impaired.

- Fourth, we learned that major municipal debt underwriters tend to have lower rates but higher fees. Conversely, regional banks tend to have higher rates and lower fees. Careful analysis is required to determine the most cost-effective arrangement. Our consultant was of great assistance in coming to a bottom-line cost among the various proposals received.

The manner in which we structured the debt issue — using tax-exempt, variable-rate demand notes — permitted us to borrow at less than 50% of the prime rate. This innovative debt structure is fairly new in the public debt market but is certain to be used by an increasing number of colleges and universities. The variable rate on these notes makes them essentially an overnight money-market investment. The incorporation of provisions into the notes so the investor can "put the note back" on seven-days notice protects the investor from unfavorable future interest rates, thereby resulting in a lower interest rate to the issuer. The incorporation of call provisions in these notes permits the university to call them back at any time, should it wish to pay off all or a portion of the indebtedness prior to maturity.

We built into the notes a liquidity feature, or line of credit, whereby the bank must hold the notes at a stated interest rate if they are "put back" and cannot be remarketed. We were able to work into the terms with the bank an interest-rate cap, which would protect against large upturns in interest rates; and an option to convert a portion of the debt to a fixed rate should interest rates decline to an attractive level.

We also provided an option under which the university can reborrow up to the maximum amount of the note at any time during the five-year note's term. This permits the institution to pay

off a portion of the indebtedness as funds become available and then reborrow the funds as other equipment needs are addressed.

Although using variable-rate debt is an attractive option, the institution must exercise caution to protect itself from future interest rate fluctuations. Incorporation of the provisions just discussed can provide a sufficient comfort level while still obtaining for the institution the substantial interest savings.

In retrospect, it is clear that innovative financing for equipment and facilities has had a substantial and positive impact on the University. We have been able to bring about significant improvement in the quality and quantity of our laboratory, computing, and instructional equipment that we otherwise would not have had. Faculty morale has been enhanced. The perception of the university by state government and the corporate community also has been enhanced because we demonstrated that we were able to do something innovative to help ourselves.

Perhaps of greatest importance has been an expanded view of what is possible in a time of fiscal constraint. As a result of information and expertise gained in this project, the university has moved to address other equipment and facility needs through participation in corporate programs for equipment acquisition, the creation of an auxiliary enterprise to manage the purchase and lease-purchase of personal computers by students, and the issuance of the state's first variable-rate revenue bond to finance a warehouse facility and student housing. It is clear that other initiatives, utilizing other techniques, will be required in the years ahead. Those universities which effectively organize to take advantage of the opportunity for innovation can face the future with increased confidence.

Creating a State Equipment Fund

5

Gordon K. Davies
Director
State Council of Higher Education in Virginia

The vitality of higher education in the 1990s and beyond is jeopardized by many of the same problems faced by the national economy in general and major industries in particular. Well-established companies that have not kept up with new technology and changing market demands have lost out to companies whose equipment and methods are designed for the contemporary market. Industries that have failed to invest in the future have been displaced.

Higher education, as a national enterprise, could find itself in the same circumstances. The great expansion of postsecondary education in the 20 years following World War II has left many institutions with educational equipment that was acquired during the building boom and is now obsolete.

● A National Problem

In April 1984, the National Science Foundation, in a study of equipment in engineering, computer and physical sciences, concluded that about one-fourth of the equipment in use in 1982 was obsolete. The aggregate purchase price of the surveyed research equipment in these three disciplines at a sample of institutions was $904 million. As NSF expands the study to encompass agricultural, biological, environmental and medical programs, the extent of the problem will be better understood. Even without generalizing the NSF finding to other academic disciplines or to other sectors beyond this sample of doctoral institutions, we can see that the magnitude of the national problem is enormous.

An earlier NSF study, conducted in 1980, found that educational institutions were using obsolete equipment to train students for careers in research laboratories and manufacturing industries, where state-of-the-art equipment is in place. The study showed that classroom and laboratory equipment in universities was about twice the age of comparable equipment in pri-

vate industry. In the past five years, increasingly rapid technological development has exacerbated postsecondary equipment deficits even more.

For a variety of reasons most institutions are underequipped and unprepared to deal with the problems of obsolete or aging equipment inventories:

a. Educational equipment often is purchased originally as part of the cost of capital projects. Planning is focused on the expected useful life of the buildings and does not consider the shorter useful life of the equipment. Subsequent acquisitions of equipment for educational and general programs come from the operating budgets of the institutions in years when funding levels permit discretionary allocations for educational equipment.

b. Educational institutions do not depreciate capital investments and do not accumulate operating reserves to replace worn-out and obsolete educational equipment. Management decisions that reduce operating costs are not rewarded by making the savings available for other uses, but ordinarily result in year-end reversions and budget reductions.

c. Years of budgetary constraint and increases in mandatory costs have diverted funds away from the acquisition of educational equipment.

d. Demand for adequate educational equipment has broadened to more academic disciplines as new applications are made possible by improved instrumentation. A widening range of degree programs is producing graduates who will lack up-to-date skills unless aging educational equipment is continuously replaced.

e. Only the largest and wealthiest institutions have had the fiscal and administrative capacities to arrange attractive short-term financing for essential equipment.

● The Virginia Equipment Analysis

In Virginia, a recent study of equipment inventories in educational and general programs resulted in the conclusion that the movable equipment inventory of the state's public colleges and universities was worth about $600 million. The educational equipment is estimated to be about one-half of the total inventory, or $300 million. The average useful life of educational equipment is about seven years.

There are three aspects of maintaining a satisfactory inventory of educational equipment: replacing worn-out equipment, replacing obsolescent equipment, and acquiring equipment that is needed but not affordable. We estimated that the first of these can be handled through normal operating budget appropriations, if approximately 8% of the replacement value of the inventory is appropriated annually.

Overcoming accumulated equipment obsolescence in Virginia's colleges and universities, however, will cost about $100 million. In addition, an annual appropriation of about one-seventh of the replacement value of the educational equipment inventory (over $40 million) would thenceforth be required to replace equipment as it becomes obsolete. These sums probably exceed the scope of a regular appropriation.

Acquiring needed equipment to remedy deficiencies could cost as much as $100 million more. The Virginia Council of Higher Education estimates that the academic computing equipment deficiency is about $43 million and that engineering program equipment is deficient by $20 million to $30 million. Again, these amounts probably exceed the scope of regular appropriations, especially when they are in addition to appropriations for normal equipment replacement.

● Collective Efforts Needed

Institutions need funding mechanisms to support educational equipment replacement, both in times of rapid change and of relatively stable enrollment. Technological advances will continue to accelerate the pace at which equipment becomes obsolete and to increase the need for regular infusions of equipment funds for technical educational programs.

Collective efforts to acquire equipment through the issuance of debt have the potential to generate large amounts of cash for very short periods of time. Pooled efforts also reduce the overhead cost of issuing debt, avoid the difficulty of marketing relatively small issues, and offer research, manufacturing and investment companies a broader range of institutional partnership possibilities. Smaller and less wealthy institutions can participate because they need not have substantial cash reserves of their own. All institutions benefit from eliminating the origination cost of the debt instrument.

One of the most important advantages of collective efforts to acquire equipment financing is the opportunity to reinvest large cash balances for the period prior to actual payment for delivered equipment or payment of debt service. The proceeds of daily cash management can be used to reduce the size of the loan or to acquire more equipment, or could accrue to the managing state authority for reinvestment until the next acquisition project is arranged. There are limitations on the arbitrage rate and period of investment of bond sale proceeds, but the advantage is not outweighed by these restrictions. The combination of earnings and equity from donated funds and equipment could, over a period of time, lead to a self-sustaining fund for higher education equipment acquisition. An issuing authority could hold title to the education equipment and lease the equipment to the institutions participating in the pool (the participants would vary from one issue to another). Alternatively, the authority could sell the equipment to institutions, with payments spread over the equipment's average useful life. The lease or purchase payments by the institutions to the authority

would constitute a first lien on the operating budget appropriations of the institution.

● The Proposed Higher Education Equipment Authority

In accordance with this rationale, Virginia's Council of Higher Education concluded that the state's colleges and universities needed such a funding mechanism to permit sound planning for financing both replacement and new equipment.

Virginia's equipment problem illustrates the speed with which equipment is outdated. It does not in any way indicate poor funding practices by normal standards. In 1984, for instance, the legislature added $15 million to the higher education budget for equipment. In 1985, it added another $5 million. These sums were over and above regular appropriations for equipment purchase, but they do not keep pace with rate of obsolescence, nor do they provide the means to overcome equipment deficiencies.

The Virginia Council of Higher Education has proposed that a Higher Education Equipment Authority be created to sell an ongoing series of pooled-equipment bond issues and to manage their proceeds. The proceeds of the issues will support institutional equipment requirements selected by the Council of Higher Education. The term and frequency of the issues will depend upon the specific needs of the institutions participating in each issue. The size and timing of the issues will take advantage of market demand and interest-rate dynamics to achieve the lowest possible equipment-acquisition costs.

The Authority will lease the equipment to the participating institutions, and the lease payments will be supported by earmarked appropriations spread over the term of each lease. The Authority will be empowered to develop equity reserves consistent with applicable federal tax regulations, in the normal course of managing bond proceeds and from other sources, including tax-advantaged donations. The Authority will also use, at its discretion, letters of credit, bond insurance and other credit enhancements if they are cost effective. The Authority will become self-sustaining over time.

In March 1985, the Virginia General Assembly agreed to study the Council's proposal during 1985, and indicated strong support for creating a Higher Education Equipment Authority in the 1986 session.

● Why State Policy?

The question that remains is: Why is this a state issue, rather than an institutional one? There are several reasons.

- First, the magnitude of the funding problems threatening higher education is such that only a coordinated state strategy will ensure solutions.
- Second, while well-endowed institutions can issue debt to finance fixed and movable capital needs, the great majority of colleges and univer-

sities do not have this capability. State programs like a Higher Education Equipment Authority would allow all state-supported institutions to participate. We then are left with possibly only one group of institutions that cannot take advantage of debt issuance and favorable tax laws: the unendowed private colleges and universities. This is a matter of concern, too, and Virginia is examining ways in which these institutions can be included without obligation to the Commonwealth.

- Third, all but the wealthiest universities will find ongoing debt issues too expensive unless there is a vehicle such as an equipment authority. The cost of going to the market to issue bonds is very high for individual institutions, but a pooled-equipment issue can reduce costs markedly and make an issue feasible.

- Finally, the state can assure both the general public and investors that the issuance of debt is a prudent, fiscally responsible way to meet the needs of higher education when funds are limited. In addition, states can provide or develop expert technical assistance on legal and financial matters, which is otherwise available to colleges and universities only a higher prices.

Appendix

Exemplary Structure of a University Research and Development Enterprise

Note: The structure described in the following pages was designed within the context of a particular institutional framework. It is therefore only exemplary for other institutions and should not be instituted without advice of counsel.

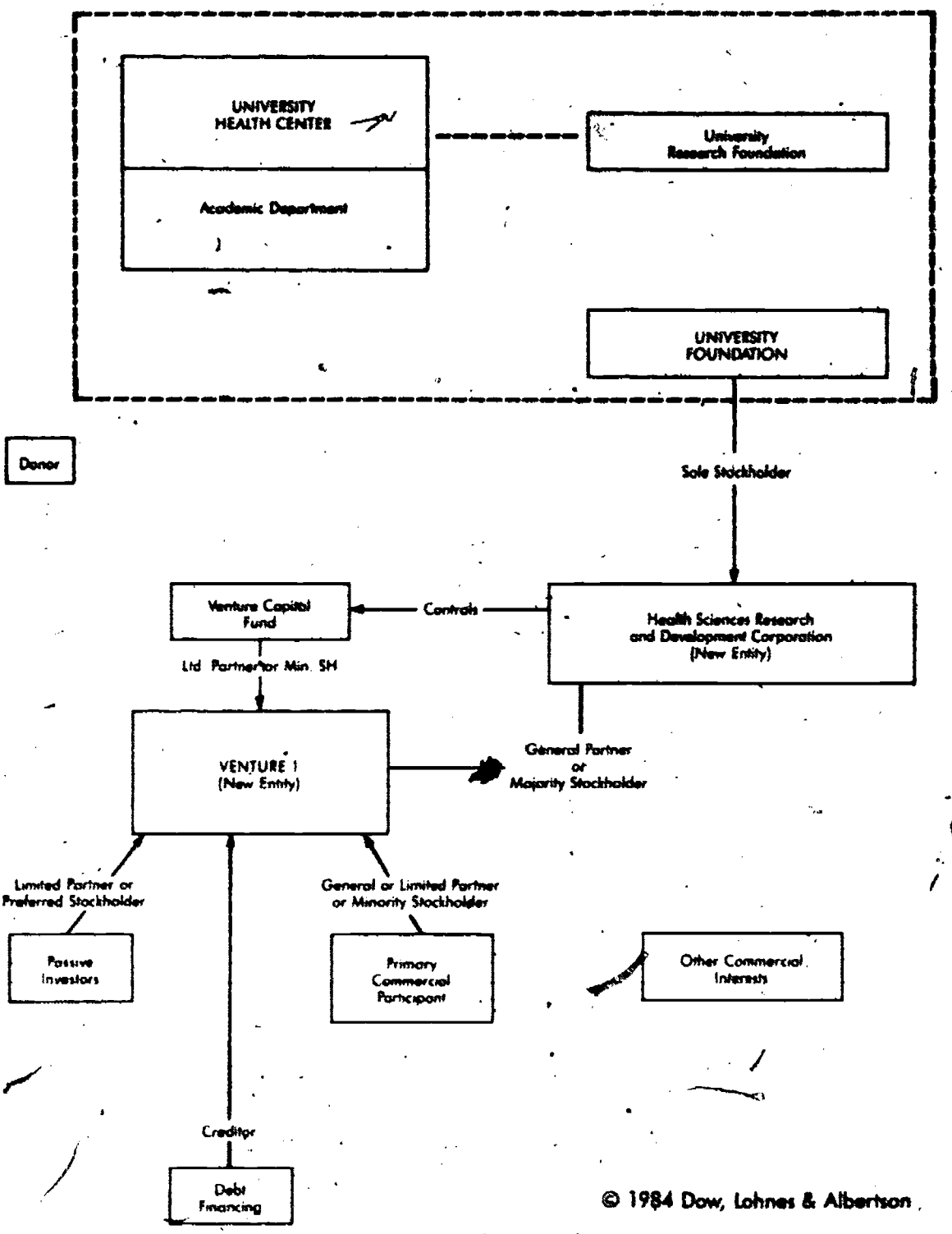
Appendix

L Ownership and Control

This chart represents the relationships between the various entities. Within the dashed rectangle are the existing university structures: the university itself, the research foundation and the university foundation. The university and the research foundation are statutorily linked; hence the dotted connection.

The Foundation is the sole stockholder of a new for-profit entity, the university health sciences research and development corporation, and appoints its entire board of directors. The R & D corporation is either a general partner or majority stockholder in one or more for-profit co-partners or minority shareholders in a Venture. Passive investors are limited partners or preferred (non-equity) stockholders, while the debt financing provides capital. The research and development corporation also controls a venture capital fund, whose purpose is to provide a vehicle for financing the start up costs of the ventures.

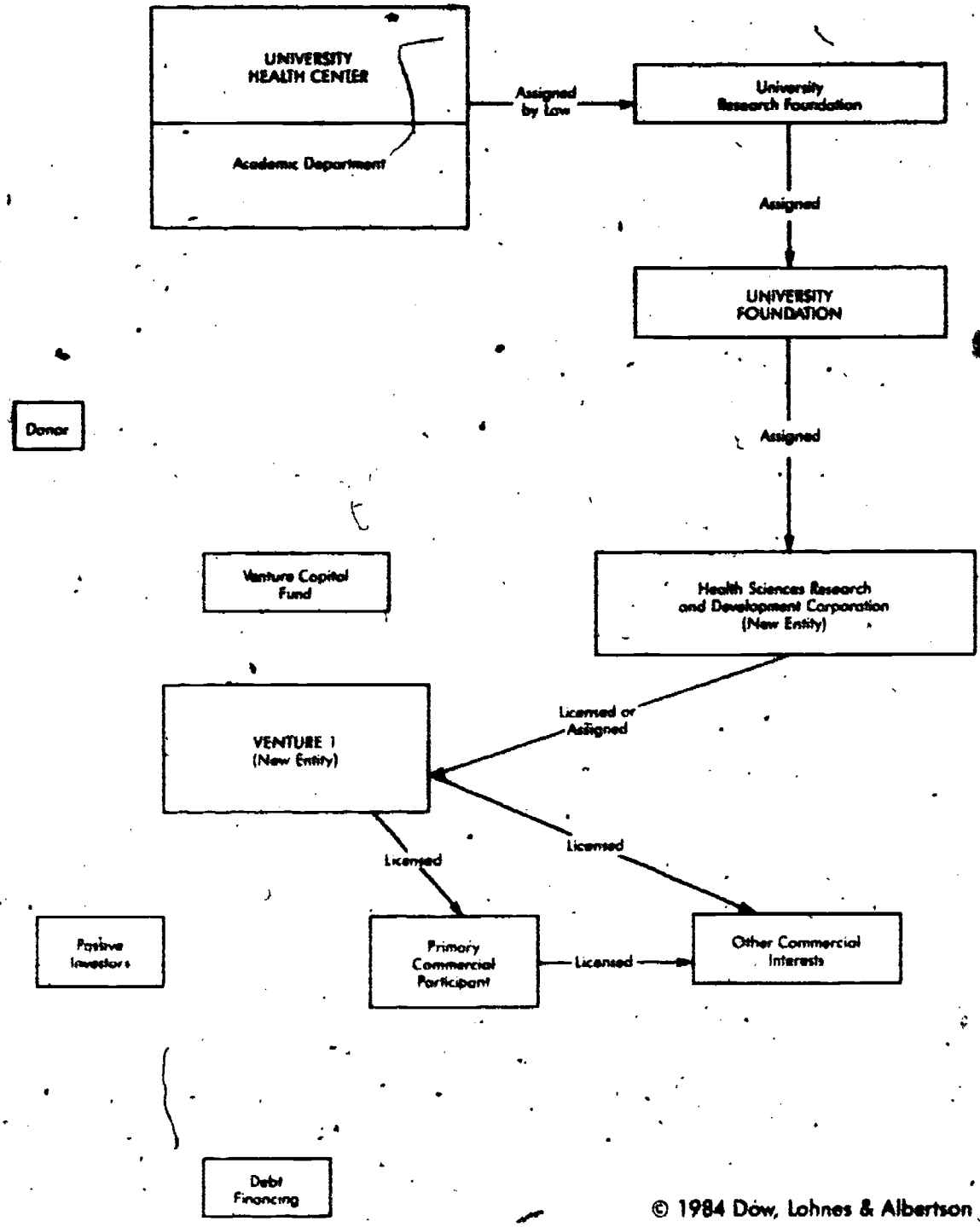
OWNERSHIP AND CONTROL



B. Rights to Intellectual Property

This chart represents the flow of patent and other rights created out of the work of faculty and researchers of the university. By state law the rights to such work are assigned to the research foundation. The research foundation exercises its discretionary power to assign the rights to the university foundation, with such limitations and requirements as it may deem appropriate. The university foundation assigns the rights, carrying with them the research foundation limitations as well as any it may add, to the R & D corporation, which in turn assigns them, with all the limitations, to the appropriate venture. The venture may license the rights to a primary commercial participant or to other commercial interests for commercial exploitation, provided that any such license carries with it all restrictions and limitations imposed by the research foundation, university foundation and the R & D corporation.

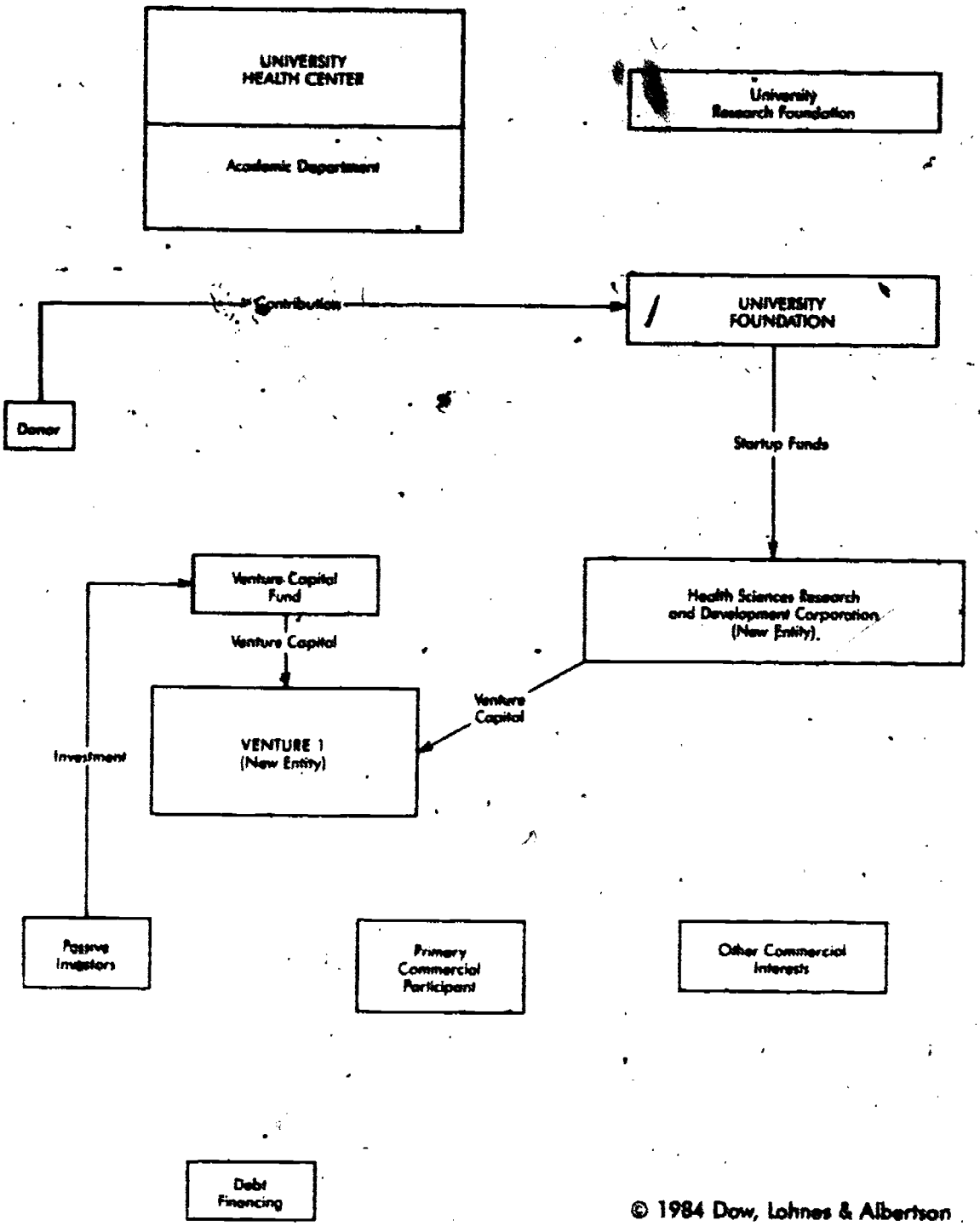
II
RIGHTS TO INTELLECTUAL PROPERTY



III. Flow of Venture Capital

This chart describes the flow of resources that would accompany the establishment of a venture capital mechanism. Two alternative routes are shown. The line from passive investors shows venture capital flowing to the venture capital fund, which capitalizes a venture established by the R & D corporation. Contributed funds may also be used by the university foundation to provide start up funds that the R & D corporation would use to capitalize new ventures.

III
FLOW OF VENTURE CAPITAL

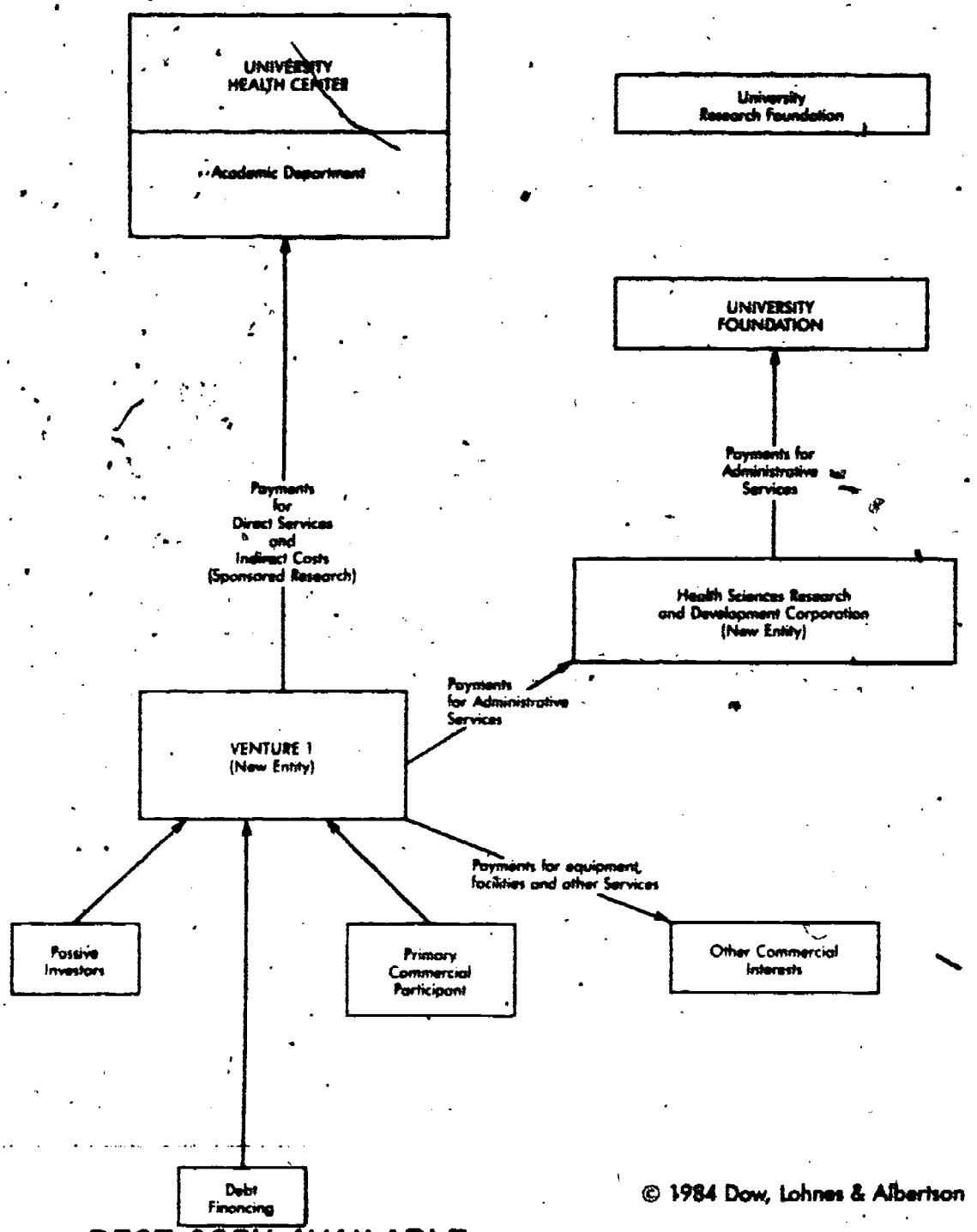


● FIL Flow of Investment Income (Working Capital)

This chart describes the flow of funds arising out of the implementation of a Venture. Working capital (investment income) flows to the venture from the primary commercial participant, passive investors and debt financing. The venture in turn contracts with the university for the conduct of sponsored research, within existing guidelines for such activities, including the payment of appropriate indirect costs. The venture also uses the working capital to acquire the instrumentation and facilities necessary to carry out the research that will be performed by university researchers under the sponsored research agreement. Administrative support for the venture is provided by the R & D corporation and the R & D corporation may in turn contract with the university foundation for management services. The venture may also contract with other outside sources for supplies and services not available through the university.

(The venture capital fund and the donor are omitted from this chart for the sake of simplicity.)

IV
FLOW OF INVESTMENT INCOME
(Working Capital)



VI. Flow of Project-Derived Income (Profit)

This chart represents the flow of funds when a venture is successful in the commercial exploitation of a discovery. The venture receives royalties and license fees from the primary commercial participant and any other commercial interests to whom it has licensed the development. It services the interest and principal of any debt it has incurred, repays (and in all probability buys out) the passive investors, returns the venture capital provided by the venture capital fund (which in turn uses these funds to capitalize other ventures established by the R & D corporation), and distributes remaining profits to either the R & D corporation or to the research foundation, depending upon the terms of the initial rights assignment. The flow of profits to the R & D corporation may be in the form of dividends or distributions, it maybe on a royalty basis, or both, while the payments to the research foundation would be in the form of royalties. The primary commercial participant may also receive income from the profits, either as dividends or distributions, based on its initial investment.

The profits received by the R & D corporation would be passed to the university foundation in the form of royalties contributions (to reduce tax liability) and dividends. The foundation would either pass the profits directly to the university or to the research foundation, depending upon the terms of the original assignment agreement with the research foundation.

Profits could also be distributed to one or more researchers in accordance with university policies and agreements entered into between the researchers and the R & D corporation, foundation or the university.

V
FLOW OF PROJECT-DERIVED INCOME
(Profits)